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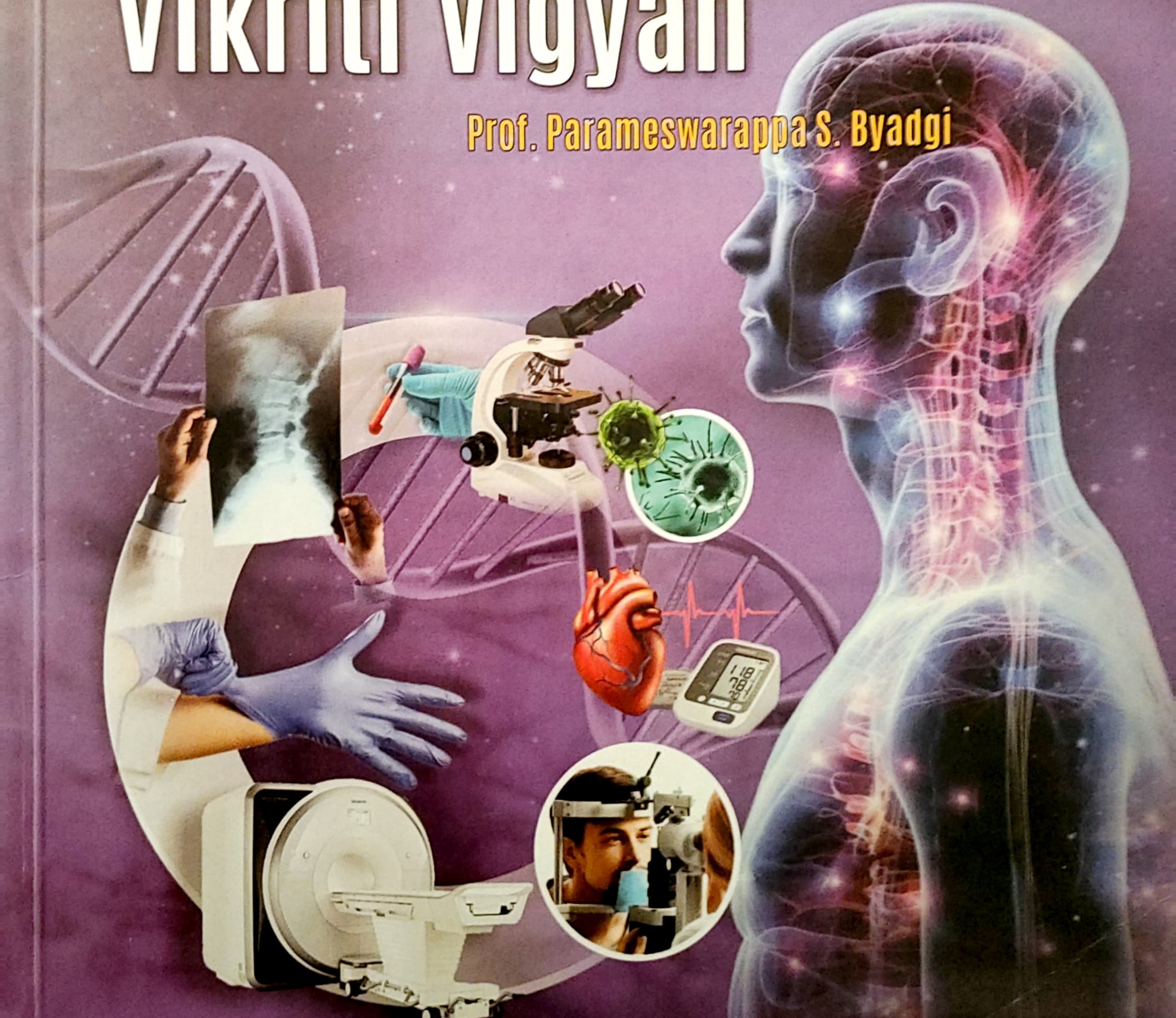
Parameswarappa's
Text book of
Roga Nidan evam Vikriti Vigyan

Prof. Parameswarappa S. Byadgi



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Text Book of Roga Nidan

&

Vikriti Vigyan

National Commission for Indian System of Medicine (NCISM)

Vol. I

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●

CHAPTER

1

Roga Nidan

Importance of Doṣa, Dhātu, Mala and Vikṛti Vijñāna

'*Vikṛti*' means the study of changes taking place at the level of fundamental factors of the disease i.e. change may be in the form of either *Vṛddhi* (Exacerbation) or *Kṣaya* (depletion) or *Vṛddhi* (Excacerbation) or *Kṣaya* (depletion) together. *Vikṛti Vijñāna* deals with the fundamental factors essential to understand the disease process as well as to diagnose the disease. It is necessary for physician to acquire the knowledge about the manifestation, diagnosis and prognosis of disease to get desired result in management.

The human body is mostly composed of *Doṣa*, *Dhātu*, *Mala* and these outline the physical machineries of the body associated with *Cetanā* .i.e. consciousness energy and activity via *Ātma* (soul). Provides this physical component with *Cetanā* i.e. consciousness energy and activity. *Prāṇa* (life) and *Jīvana* (living) are possible with the union of the *Ātma* (soul) then only activities of the body starts. The *Doṣās*, *Dhātu*s and *Malās* function normally when the body is alive.

The study of the changes occurring at the level of *Doṣās, Dūṣyās, Agni* along with the other factors which are essential to understand the diseases.

Doṣās

रजस्तमश्च मानसौ दोषौ । तयोर्विकाराः कामक्रोधलोभमोहेर्ष्यामानमदशोकचित्तो(न्तो) द्वेगभयहर्षादयः । वातपित्तश्लेष्माणस्तु खलु शारीरा दोषाः । तेषामपि च विकारा ज्वरातीसारशोफशोषश्वासमेहकुष्ठादयः (C.Vi. 6/5)

Broadly *Doṣās* may be subdivided into two kinds *Śārīrika* (pertaining to body) and *Mānasika* (pertaining to the mind). *Vāta, Pitta, Kapha* are the three *Śārīrika Doṣās* and during their homeostasis all the normal physiological functions of all cells and tissues takes place on the other hand during their disequilibrium state causes somatic diseases namely *Jvara, Atisāra, Śopha, Śoṣa, Śvāsa, Meha, Kuṣṭha* etc. *Rajas* and *Tamas* are the two *Mānasika Doṣās* and these perform normal functions during their normalcy and causes psychological diseases namely *Kāma, Krodha, Lobha, Moha, Irṣyā, Māna, Mada, Śoka, Cittodvega, Bhaya, Harṣa* etc. during their disturbed state. In certain situations both *Śārīrika Doṣās* and *Mānasika Doṣās* disturbed together leading to psychosomatic diseases namely *Unmāda, Apasmāra, Atatvābhiniveśa* etc.

Dhātus

Dhātus are seven in number namely *Rasa* (plasma, white blood cells, lymph), *Rakta* (Red blood cells, platelet), *Māmsa* (muscle tissues), *Medas* (fat/adipose tissues), *Asthi* (bone), *Majjā* (bone marrow) and *Śukra* (Semen, reproductive tissue) and these are responsible for prime functions of the body.

Upa Dhātu

रसात् स्तन्यं स्त्रियाः रक्तमसृजः कण्डराः सिराः ।
मांसद्वसा त्वचः षट् च मेदसः स्नायु सन्धयः ॥

C. Ci 15/17

स्तन्यं रजश्च नारीणां काले भवति गच्छति शुद्धमांस भवः स्नेहः सा वसा परिकीर्तिता । स्वेदोदन्तास्तथा केशास्तथैवोजश्च सप्तमम् इति धातुभवा ज्ञेया एते सप्तोपधातवः ।

S. Sa 5/16-17 (Prathama khaṇḍa)

The seven *upadhātu* are produced by the *dhātu* during metabolism are as follows.

Dhātu	*Upadhātu*
1. *Rasa dhātu*	*Stanya* (breast milk), *rajas* (menstrual fluid) appear and disappear according to age
2. *Rakta dhātu*	*Kaṇḍarā* (tendons) and *sirā* (blood vessels)
3. *Māmsa dhātu*	*Vasā* (fatty material), *ṣaṭ tvacā* (six layers of skin)

4. *Meda dhātu*	*Snāyu* (ligaments) and *sandhi* (joints), *sveda* (sweating)
5. *Asthi dhātu*	*Danta* (teeth)
6. *Majjā dhātu*	*Keśa* (hairs)
7. *Śukra dhātu*	*Ojas*

Mala

किट्टमन्नस्य विण्मूत्रं, रसस्य तु कफोऽसृजः।
पित्तं, मांसस्य खमला, मलः स्वेदस्तु मेदसः ॥
स्यात्किट्टं केशलोमास्थ्नो, मज्ज्ञः स्नेहोऽक्षिविट् त्वचां।
प्रसादकिट्टे धातूनां पाकादेवंविधर्च्छतः ॥
परस्परोपसंस्तम्भाद्धतो देहं परस्परम्।

C. Ci 15/18-20

कफः पित्तं मलः खेषु प्रस्वेदो नखरोम च।
स्नेहोऽक्षित्वग्बिशामोजो धातूनां क्रमशो मलाः।

A. Śā 3/63-64

It is called *mala* because it is having a tendency to vitiate others. Consumed food as well as *dhātus* manifest *malās* during the process of digestion & metabolism are as follows–

Source	***Kitta* (Waste products)**
1. *Anna* (food)	Stool (*viṇ*) and urine (*mūtra*)
2. *Rasa dhātu*	*Kapha*
3. *Rakta dhātu*	*Pitta*
4. *Māmsa dhātu*	*Khamala* (Excreta from external channels)
5. *Meda dhātu*	*Sveda* (Sweat)
6. *Asthi dhātu*	*Keśa, loma* (Hairs in the head & body), *nakha* (Nails)
7. *Majjā dhātu*	*Snehāmśa* in *akṣi, viṭ* & *tvacā* (lubricating material in the eyes, feacal matter & skin)
8. *Śukra dhātu*	*Ojas*

Any alteration in *pramāṇa/dravyatah* (quantity), *Guṇa* (qualities) and *Karma* (functions) of *Doṣās* , *Dhātus* and *Mala's* causes diseases.

So that branch of medical science which deals with *Prakṛti* or *Sāmya* (normalcy) is known as *Prakṛti Vijñāna* or *Sāmya Vijñāna* (physiology) and that which deals with *Vikṛti* or *Vaisamya* (abnormalcy) is known as *Vikṛti Vijñāna*.

Seven types of *Mala*

मलायनानीत्यनेन पञ्चेन्द्रियाधिष्ठानानां मुखनासिकाचक्षुः-कर्णानां त्वगिन्द्रियाधिष्ठानभूतानां च लोमकूपप्रजननानां यथास्वं मलायनानि गृह्यन्ते। यदुक्तं जतूकर्णे- 'दोषाणां धातूनामोजोमूत्र-शकृदिन्द्रियमलानाम्। *C.S.Su. 17/72*

1. *Mūtra*
2. *Sakṛd*

Indriya Mala - 5

1. *Mukha Mala*
2. *Nāsikā Mala*
3. *Cakṣu Mala*
4. *Karṇa Mala*
5. *Tvak Mala*

समदोषः समाग्निश्च समधातुमलक्रियः।
प्रसन्नात्मेन्द्रियमनाः स्वस्थ इत्यभिधीयते ॥

S.Su. 15/48

The equilibrium state of the *Doṣa Dhātu* and *Mala* associated with proper functions of *Agni* accompanied by a sense of well being of *Ātma*. *Mana* and *Indriyās*. Any variation in these definitely causes diseases.

The *Vaiṣamya* of *Doṣa Dhātu* and *Mala* etc can be explained by numerous ancillary investigations such as blood analysis, urine analysis, stool analysis, sputum analysis, X-rays, scanning etc.

दोषः प्रकुपितो धातून् क्षपयत्यात्मतेजसा।
इद्धः स्वतेजसा वह्निरुखागतमिवोदकम् ॥
वैलक्षण्याच्छरीराणामस्थायित्वात् तथैव च।
दोषधातुमलानां तु परिमाणं न विद्यते ॥
एषां समत्वं यच्चापि भिषग्भिरवधार्यते।
न तत् स्वास्थ्यादृते शक्यं वक्तुमन्येन हेतुना ॥
दोषादीनां त्वसमतामनुमानेन लक्षयेत्।
अप्रसन्नेन्द्रियं वीक्ष्य पुरुषं कुशलो भिषक् ॥
स्वस्थस्य रक्षणं कुर्य्यादस्वस्थस्य तु बुद्धिमान्।

क्षपयेद् बृंहयेच्चापि दोषधातुमलान् भिषक्।
तावद्यावदरोगः स्यादेतत्साम्यस्य लक्षणम्॥

S.S Su 15/43-47

In this connection we have to consider one more point that when a patient complain of '*Aprasannendriyatva*' (feeling of uneasy) and yet no abnormal findings are detected in the pathological investigations. Based on this one should not conclude that there is no *Vikṛti* or disease because sometimes certain pathological changes are not traceable by investigations. The changes that are untraceable may become traceable with the advancement of the technology of investigation or advancement of the diseases.

Generally patients approach a physician if he or she feels something unusual. But sometimes a patient may not feel malfunction even though there is a concealed pathological state in the body. Luckily there is a rising trend among the people to approach a physician for investigations as a routine check up but sometimes investigations are done for some other reasons like before surgery etc which helps to detect the abnormality. It is extremely advantageous to trace out the *Vaiṣamya* (abnormality) in the early stages when the pathological condition is not manifested completely.

Ayurvedic Physician should acquire the knowledge of advanced techniques of pathological investigations to interpret the abnormal variations of *Doṣa*, *Dhātu*, *Mala* etc in the scientific perspective. Hence thorough knowledge of modern methods of Pathological investigations is needed.

Vaiṣamya exists in two different levels namely physiological and pathological one. Hence physician must be able to differentiate both conditions accurately to become successful practitioner.

पश्चाच्चिकित्सेत्तूर्णं वा बलवन्तमुपद्रवम्।
व्याधिक्लिष्टशरीरस्य पीडाकरतरो हि सः॥
विकारनामाकुशलो न जिह्रीयात् कदाचन।
नहि सर्वविकाराणां नामतोऽस्ति ध्रुवा स्थितिः॥
स एव कुपितो दोषः समुत्थानविशेषतः।
स्थानान्तराणि च प्राप्य विकारान् कुरुते बहून्॥
तस्माद्विकारप्रकृतीरधिष्ठानान्तराणि च।
बुद्ध्वा हेतुविशेषांश्च शीघ्रं कुर्यादुपक्रमम्॥
दूष्यं देशं बलं कालमनलं प्रकृतिं वयः।
सत्त्वं सात्म्यं तथाऽऽहारमवस्थाश्च पृथग्विधाः॥
सूक्ष्मसूक्ष्माः समीक्ष्यैषां दोषौषधनिरूपणे।
यो वर्तते चिकित्सायां न स स्खलति जातुचित्॥

A.H.Su. 12/63-68

An ordinary *vaidya* may prescribe treatment after taking *lakṣaṇās* alone into consideration. But this does not means that he has understood the underlying *Vikṛti*. Hence it becomes merely a symptomatic treatment. A good physician should understand the exact nature of *Vikṛti* in *Doṣa*, *Dhātu* and *Mala* from a study of *lakṣaṇās* or through investigations. Hence a thorough knowledge of *Vikṛti Vijñāna* is absolutely essential.

An example will illustrate this point A female patient may complain only about *pāṇḍutā* (paleness), *Śramasvāsa* etc. without revealing the history of *Atyārtava* (menorrhagia). Here *vaidya* should ask for specific information regarding. *Atyārtava* and if it is there he should further investigate the *Vikṛti* of *rajaupadhātu* and treat accordingly.

सञ्चयञ्च प्रकोपञ्च प्रसरं स्थानसंश्रयम्।
व्यक्ति भेदञ्च यो वेत्ति दोषाणां स भवेद्भिषक्॥

S.Su. 21/36

Suśruta has described six stages of *Vikṛti* viz. *Caya, Prakopa*, *Prasara Sthānasamśraya*, *vyakti* and *bheda*, among these stages *sthānasamśraya avastha* is very important because in this stage *Doṣa-Dūṣya Sammurchanā* takes place and *Vikṛti* in its real form comes into existence. Two factors are important viz 1. *Doṣa Prakopa*, 2. *Dūṣya vaiguṇya* to recognise these two factors it is *Dhātu*, *Mala Vikṛti*. A knowledge of *Doṣa Vikṛti* will be useful in preventing *Doṣaprakopa* and knowledge of *Dhātuvikṛti* will enable us to improve *Dhātubala* by using *Rasāyanās* and increase *Vyādhikṣamatva*.

Vāta Doṣa has intimate relationship with all *Dhātus*. The cause of *Vātaprakopa* may be either 1. *Dhātukṣaya* or 2. *Mārgāvarodha* i.e. obstruction in *Dhātus*. The method of treatment of these two categories is not only different but also contradictory. Hence knowledge of *Vikṛti Vijñāna* is essential to identify these conditions.

प्रसङ्गाद् गात्रसंस्पर्शान्निश्वासात्सहभोजनात् ।
सहशय्याऽऽसनाच्चापि वस्त्रमाल्यानुलेपनात् ॥
कुष्ठं ज्वरश्च शोषश्च नेत्राभिष्यन्द एव च ।
औपसर्गिकरोगाश्च सङ्क्रामन्ति नरान्नरम् ॥
S.Ni. 5/32-33

Ayurveda has had a knowledge of *Kṛmivijñāna* ever since the vedic period. *Suśruta* has also stressed the importance of *kṛmis* as a prominent *Vyādhi-hetu*, especially in the case of communicable or infectious diseases.

Doṣa prakopa may produce organic changes in different *Srotas* and *Dhātus* such as inflammation, degeneration, atrophy, new growths etc. To understand these changes morbid anatomy of *Dhātus* and *Srotas* must be studied.

Vikṛti Vijñāna provides us with information about the etiological factors (hetus), Pathological states and *lakṣaṇa* of *Doṣa*, *Dhātu* and *Mala*, the six stages of *Samprāpti*, the importance of *Āma* and *Agni*, the importance of *Vyādhikṣamatva,* the nature of *Srotovikṛti* and many other things.

Definition of Pathology

- The word 'Pathology' is derived from two Greek words pathos meaning suffering, and logos meaning study.
- Pathology literally translates to the study of suffering (Greek pathos = suffering, logos = study); more prosaically, the term pathology is invoked to represent the study of disease.
- Virchow coined the term cellular pathology to emphasize the basic tenet that all diseases originate at the cellular level. Thus, modern pathology is basically the study of cellular abnormalities.
- Pathology is, thus, scientific study of structure and function of the body in disease; or in other words, pathology consists of the abnormalities that occur in normal anatomy (including histology) and physiology owing to disease.

Pathophysiology

- Another commonly used term with reference to study of diseases is 'pathophysiology' comprised by two words: patho=suffering; physiology=study of normal function.
- Pathophysiology (consisting of the Greek origin words "pathos" = suffering; "physis" = nature, origin; and "logos" = "the study of") refers to the study of abnormal changes in body functions that are the causes, consequences, or concomitants of disease processes.
- Pathophysiology, thus, includes study of disordered function or breakdown of homeostasis in diseases.
- Studies of pathophysiology are concerned with the investigation of biological processes that are directly related to disease processes of physical, mental, or psychophysiological conditions and disorders (e.g., alterations in the endocrine system, in certain neurotransmitters, or inflammatory parameters related to the activity of the immune system).
- Thus, pathophysiological research aims at identifying biological markers and mechanisms for predicting and explaining disease processes in terms of etiology and pathogenesis.
- Pathophysiology is formally considered as a sub discipline within physiology.
- Pathologists are the diagnosticians of disease. Therefore, knowledge and understanding of pathology is essential for all would-be doctors, general medical practitioners and specialists since unless they know the causes, mechanisms, nature and type of disease, and understand the language spoken by the pathologist in the form of laboratory reports, they would not be able to institute appropriate treatment or suggest preventive measures to the patient.
- For the student of any system of medicine, the

discipline of pathology forms a vital bridge between initial learning phase of preclinical sciences and the final phase of clinical subjects.

- Remember the prophetic words of one of the eminent founders of modern medicine in late 19th and early 20th century, Sir William Osler, "Your practice of medicine will be as good as your understanding of pathology."
- Traditionally the study of pathology is divided into general pathology and systemic pathology.
- General pathology is concerned with the reactions of cells and tissues to abnormal stimuli and to inherited defects, which are the main causes of disease.
- Systemic pathology examines the alterations in specialized organs and tissues that are responsible for disorders that involve these organs.

Health and Disease

- Before there were humans on earth, there was disease, albeit in early animals. Since pathology is the study of disease, then what is disease? In simple language, disease is opposite of health i.e. what is not healthy is disease.
- Health may be defined as a condition when the individual is in complete accord with the surroundings
- Disease may be defined as a loss of ease (or comfort) to the body (i.e. dis-ease).
- A term commonly confused with disease is illness.
- While disease suggests an entity with a cause, illness is the reaction of the individual to disease in the form of symptoms (complaints of the patient) and physical signs (elicited by the clinician). Though disease and illness are not separable, the study of diseases is done in pathology while the learning and management of illnesses is done in wards and clinics.
- In addition to disease and illness, there are syndromes (meaning running together) characterised by combination of symptoms caused by altered physiologic processes.

Four Aspects of a Disease Process

The four aspects of a disease process that form the core of pathology are as follows:

1. Etiology Causative factors of the disease
2. Pathogenesis- The mechanisms of development of disease process
3. Molecular and Morphologic changes- The biochemical and structural alterations induced in the cells and organs of the body.
4. Clinical manifestations- The functional consequences resulting into manifestations of clinical symptoms and signs.

Etiology or Cause

There are two major classes of etiologic factors:

1. Genetic (e.g., inherited mutations and disease-associated gene variants, or polymorphisms)
2. Acquired (e.g., infectious, nutritional, chemical, physical).

The idea that one etiologic agent is the cause of one disease developed from the study of infections and single-gene disorders is not applicable to the majority of diseases. In fact, most of our common afflictions, such as atherosclerosis and cancer, are multifactorial and arise from the effects of various external triggers on a genetically susceptible individual. The relative contribution of inherited susceptibility and external influences varies in different diseases.

Pathogenesis

Pathogenesis refers to the sequence of events in the response of cells or tissues to the etiologic agent, from the initial stimulus to the ultimate expression of the disease. The study of pathogenesis remains one of the main domains of pathology. Even when the initial cause is known (e.g., infection or mutation), it is many steps removed from the expression of the disease. For example, to understand cystic fibrosis is to know not only the defective gene and gene product, but also the biochemical and morphologic events leading to the formation of cysts and fibrosis in the lungs, pancreas, and other organs. Nevertheless, the functions of the encoded proteins and how mutations induce disease the pathogenesis are still often obscure. Technologic advances are making it increasingly feasible to link specific molecular abnormalities to disease manifestations and to use this knowledge to design new therapeutic approaches. For these reasons, the study of pathogenesis has never been more exciting scientifically or more relevant to medicine.

Molecular and Morphologic Changes

Morphologic changes refer to the structural alterations in cells or tissues that are either characteristic of a disease or diagnostic of an etiologic process. The practice of diagnostic pathology is devoted to identifying the nature and progression of disease by studying morphologic changes in tissues and chemical alterations in patients. More recently the limitations of morphology for diagnosing diseases have become increasingly evident, and the field of diagnostic pathology has expanded to encompass molecular biologic and immunologic approaches for analyzing disease states. Nowhere is this more striking than in the study of tumors; breast cancers that look morphologically identical may have widely different courses, therapeutic responses, and prognosis. Molecular analysis by techniques such as DNA microarrays has begun to reveal genetic differences that predict the behavior of the tumors as well as their responsiveness to different therapies. Increasingly, such techniques are being used to extend and even supplant traditional morphologic analyses.

Functional Derangements and Clinical Manifestations

The end results of genetic, biochemical, and structural changes in cells and tissues are functional abnormalities, which lead to the clinical manifestations (symptoms and signs) of disease, as well as its progress (clinical course and outcome).

Virtually all forms of disease start with molecular or structural alterations in cells, a concept first put forth in the nineteenth century by Rudolf Virchow, known as the father of modern pathology. We therefore begin our consideration of pathology with the study of the causes, mechanisms, and morphologic and biochemical correlates of cell injury. Injury to cells and to extracellular matrix ultimately leads to tissue and organ injury, which determine the morphologic and clinical patterns of disease.

Terminology in Pathology

It is important for a beginner in pathology to be familiar with the language used in pathology:

- Patient is the person affected by disease.
- Lesions are the characteristic changes in tissues and cells produced by disease in an individual or experimental animal.
- Pathologic changes or morphology consist of examination of diseased tissues.
- Pathologic changes can be recognised with the naked eye (gross or macroscopic changes) or studied by microscopic examination of tissues.
- Causal factors responsible for the lesions are included in etiology of disease (i.e. 'why' of disease).
- Mechanism by which the lesions are produced is termed pathogenesis of disease (i.e. 'how' of disease).
- Functional implications of the lesion felt by the patient are symptoms
- Those discovered by the clinician are the physical signs.
- Clinical significance of the morphologic and functional changes together with results of other investigations help to arrive at an answer to what is wrong (diagnosis), what is going to happen (prognosis), what can be done about it (treatment), and finally what should be done to avoid complications and spread (prevention) (i.e. 'what' of disease).

Evolution of Pathology

- Pathology as the scientific study of disease processes has its deep roots in medical history. Since the beginning of mankind, there has been desire as well as need to know more about the causes, mechanisms and nature of diseases. The answers to these questions have evolved over the centuries from supernatural beliefs to the present state of our knowledge of modern pathology.

- Pathology is not separable from other multiple disciplines of medicine and owes its development to interaction and interdependence on advances in diverse neighbouring branches of science, in addition to the strides made in medical technology.
- Pathology has evolved over the years as a distinct discipline from anatomy, medicine and surgery etc.

Subdivisions of Pathology

Human pathology is the largest branch of pathology. It is conventionally divided into General Pathology dealing with general principles of disease, and Systemic Pathology that includes study of diseases pertaining to the specific organs and body systems.

The speciality of pathology has come to include the following sub specialities

Histopathology

Histopathology, used synonymously with anatomic pathology, pathologic anatomy, or morbid anatomy, is the classic method of study and still the most useful one which has stood the test of time.

- The study includes structural changes observed by naked eye examination referred to as gross or macroscopic changes, and the changes detected by light and electron microscopy supported by numerous special staining methods including histochemical and immunological techniques to arrive at the most accurate diagnosis.
- Modern time anatomic pathology includes super-specialities such as cardiac pathology, pulmonary pathology, neuropathology, renal pathology, gynaecologic pathology, breast pathology, dermatopathology, gastrointestinal pathology, oral pathology, and so on.

Anatomic pathology includes the following 3 main subdivisions

1. **Surgical pathology :** It deals with the study of tissues removed from the living body. It forms the bulk of tissue material for the pathologist and includes study of tissue by paraffin embedding techniques and by frozen section for rapid diagnosis.
2. **Forensic pathology and autopsy work :** This includes the study of organs and tissues removed at post-mortem for medicolegal work and for determining the underlying sequence and cause of death.
3. **Cytopathology :** Though a branch of anatomic pathology, cytopathology has developed as a distinct subspeciality in recent times. It includes study of cells shed off from the lesions (exfoliative cytology) and fine-needle aspiration cytology (FNAC) of superficial and deep-seated lesions for diagnosis.

Haematology

Haematology deals with the diseases of blood. It includes laboratory haematology and clinical haematology.

C. Chemical Pathology

Analysis of biochemical constituents of blood, urine, semen, CSF and other body fluids is included in this branch of pathology.

D. Immunology

Detection of abnormalities in the immune system of the body comprises immunology and immunopathology.

E. Experimental Pathology:

This is defined as production of disease in the experimental animal and its study. However, all the findings of experimental work in animals may not be applicable to human beings due to species differences.

F. Geographic Pathology

The study of differences in distribution of frequency and type of diseases in populations in different parts of the world forms geographic pathology.

G. Medical Genetics

This is the branch of human genetics that deals with the relationship between heredity and disease. e.g. in blood groups, inborn errors of metabolism, chromosomal aberrations in congenital malformations and neoplasms etc.

H. Molecular Pathology

The detection and diagnosis of abnormalities at the level of DNA of the cell is included in molecular pathology. Recent advancements in molecular biologic techniques have resulted in availability of these methods not only for research purposes but also as a tool in diagnostic pathology.

1. Harsha Mohan. Textbook of Pathology. Jaypee Brothers Medical Publishers (P) Ltd; St Louis (USA) Panama City (Panama) New Delhi Ahmedabad Bengaluru, Chennai Hyderabad Kochi Kolkata Lucknow Mumbai Nagpur. 6th edition
2. Vinay Kumar et al. Robbins and Cotran Pathologic Basis of Disease. *Eighth Edition. Saunders-Elsevier publication.*
3. Parameswarappas's Madhava Nidan, Chaukambha Sanskrit Sansthan, Varanasi, first edition.

CHAPTER
2

Rogi Pareeksha and Roga Pareeksha

Physician should develop technical skill, scientific knowledge and human understanding to acquire complete knowledge for the diagnosis of various diseases. Patient is human, fearful, hopeful, seeking relief and reassurance from physician to get rid off his or her afflictions. Physician should be attentive listener, nonverbal communicator, friendly, emphathic and articulate. It is important to diagnose the disease by using appropriate techniques and accordingly treat the treatable disease with love and affection. It is better not to treat uncurable diseases. Complete understanding of science is essential to get mastery and supremacy in clinical methods.

मिथ्यादृष्टा विकारा हि दुराख्यातास्तथैव च।
तथा दुष्परिमृष्टाश्च मोहयेयुश्चिकित्सकम्।

S.Su 10/7

Improper observation of patient by physician, which have not been thoroughly described and diseases which have not been diagnosed correctly are going to confuse the physician.

स्त्रीभिः सहास्यां संवासं परिहासं च वर्जयेत्।
दन्तं च तथ्यो नादेयमन्नादन्यद्भिषग्वरैः॥

S.Su 10/9

The ideal physician should avoid the company of women and should not sit with them closely, staying with them, and cutting jokes with them and don't accept any gift from women other than food.

Importance of Parīkṣā

आप्ततश्चोपदेशेन प्रत्यक्षकरणेन च।
अनुमानेन च व्याधीन् सम्यग्विद्याद्विचक्षणः॥
सर्वथा सर्वमालोच्य यथासंभवमर्थवित्।
अथाध्यवस्येत्तत्त्वे च कार्ये च तदनन्तरम्॥

C.S.Vi. 4/9-10

1. The judicious physician must appropriately recognize an illness by the *Āptopadeśa* (authoritative instructions), *Pratyakṣa* (examination and understanding through the sense organs/observation & perception) and *Anumāna* (inference).
2. After thorough examination of the patient by *Āptopadeśa* and other tools the physician will acquire the knowledge concerning to the nature of disease followed by therapies.

कार्यतत्त्वविशेषज्ञः प्रतिपत्तौ न मुह्यति।
अमूढः फलमाप्नोति यदमोहनिमित्तजम्॥

C.S.Vi. 4/11

One who is well versed in the precise nature of the disease as well as the therapies are required therefore seldom fails to act properly. It is only he who acts properly that reaps the results of proper action (i.e. achieves success).

ज्ञानबुद्धिप्रदीपेन यो नाविशति तत्त्ववित्।
आतुरस्यान्तरात्मानं न स रोगांश्चिकित्सति॥

C.S.Vi. 4/12

When a physician who even if well versed in the acquaintance of the disease and its treatment modalities does not try to enter into the heart of the patient by virtue the light of his knowledge, he will not be able to treat the diseases.

Cakrapāṇi Datta Āyurveda Dipīkā

सर्वरोगविशेषाणां त्रिविधं ज्ञानसंग्रहम्।
यथा चोपदिशन्त्याप्ताः प्रत्यक्षं गृह्यते यथा॥
ये यथा चानुमानेन ज्ञेयास्तांश्चाप्युदारधीः।
भावांस्त्रिरोगविज्ञाने विमाने मुनिरुक्तवान॥

C.S.Vi. 4/13-14

Āptopadeśa, Pratyakṣa and *Anumāna* are the three *Pramāṇa* to understand the disease in toto followed the instruction of *Āptās* (sages), by *Pratyakṣa* (observation via sense organs & perception) and *Anumāna* (inference) are explained

रोगी रोग परीक्षा भेद (Various methods of Rogī Roga Parīkṣā)

द्विविध रोगी परीक्षा (Two fold examination)

द्विविधां परीक्षा ज्ञानवतां प्रत्यक्षमनुमानञ्च।

C.S.Vi. 8/83

Pratyakṣa (perceptual) and *Anumāna* (inferential) are the two varieties of examination tools mentioned for the diagnosis of diseases.

त्रिविध रोगी परीक्षा (Three fold examination)

चरकोक्त त्रिविध परीक्षा (Carakokta *Trividha Parīkṣā*)

दर्शनप्रश्नसंस्पर्शैः परीक्षा त्रिविधा स्मृता ।
वयोवर्णशरीराणामिन्द्रियाणां च दर्शनात् ॥
हेत्वर्तिसात्म्याग्निबलं परीक्ष्यं वचनाद्बुधैः ।
स्पर्शान्मार्दवशैत्ये च परीक्ष्यं सविपर्यये ॥
C.S.Ci. 25/22-23

Examination of *Vrṇa* (ulcer) is performed by three methods.

1. *Darśana* - Inspection
2. *Praśna* - interrogation
3. *Spraśa*- Palpation

I. Examined by Darśana Parīkṣā (inspection)

1. *Vāya* - Age
2. *Varṇa* - Complexion and color
3. *Śarīra* - Body parts
4. *Indriya*- Sense Organs is examined by *Darśana* (inspection).

II. Examined by Praśna Parīkṣā (interrogation)

1. *Hetu* - Etiology
2. *Arati* - Nature of pain
3. *Sātmya* - Suitability
4. *Agni Bala* - Power of digestion should be known by patient's statement.

III. Examined by Sparśana Parīkṣā (palpation)

1. *Mārdava* - Softness
2. *Śaitya* - Coldness or heat in *Vrṇa* part of the body

सुश्रुतोक्त त्रिविध परीक्षा (*Suśrutokta Trividha Parīkṣā*)

आतुरमभिपश्येत् स्पृशेत्, पृच्छेच्च । त्रिभिरेतैर्विज्ञानोपायै रोगाः प्रायशो वेदितव्या इत्येके । *S.S.Su. 10/4*

त्रिभिरेतैरित्यादि त्रिभिरेतैर्विज्ञानोपायैरनन्तरोक्तैर्दर्शनस्पर्शनप्रश्नैः । *S.S.Su. 10/4 Dalhaṇa*

Three methods of Examination :

1. *Paśyet (Darśana)* - Inspection
2. *Spṛśet (Spraśana)* - Palpation
3. *Pṛcchecca (Praśna)* - Interrogation

दर्शनस्पर्शन प्रश्नैः परीक्षेत च रोगिणाम् ।
A.H.Su. 1/22

Darśana (inspection), *Sparśana* (palpation) and *Praśna* (history taking) are the three fold examination techniques stated for the diagnosis of diseases.

त्रिविधं खलु रोगविशेष विज्ञानं भवति; तद्यथा आप्तोपदेशः, प्रत्यक्षम्, अनुमानं चेति । *C.S.Vi 4/3*

Threefold skill for the examination of patient are *āptopadeśa* (authoritative tutoring), *Pratyakṣa* (examination and understanding through the sense organs/observation & perception) and *Anumāna* (inferential).

चतुर्विध रोगी परीक्षा (Four fold examination)

चतुर्विध द्विविधमेव खलु सर्व सच्चासच्चः तस्य चतुर्विधा परीक्षा-आप्तोपदेशः, प्रत्यक्षम्, अनुमानं, युक्तिश्चेति ॥
C.S.Su 11/17

Pratyakṣa (examination and understanding through the sense organs/observation & perception), *anumāna* (inferential), *āptopadeśa* (authoritative training) and *yukti* (experimental and knowledge based evidence & practice)

निदान पञ्चक परिभाषा (Nidāna Pañcaka Paribhaṣa)

पञ्चविध मप्येतद व्याध्युत्पत्ति ज्ञाप्ति हेतुभूतं निदानशब्देनोच्यते । *M.Ni 1/4 (Madhukoṣa)*

The word *nidāna* used in two different contexts i.e. diagnosis of diseases and etiological factors of the disease.

पञ्चविध रोग परीक्षा (Five fold examination)

व्याध्युत्पत्ति ज्ञाप्ति (Diagnosis of diseases)

हेतुलक्षण निर्देशान्निदानानिति ।
M.Ni 1/4 (Madhukoṣa), S.Su. 3/14

Nidāna helps to know about etiology, symptomatology & pathogenesis.

निर्दिश्यते व्याधिरनेनेति निदानम् ।
M.Ni 1/4 (Madhukoṣa)

Acquintance of complete knowledge related to diagnosis of diseases is called *nidāna*.

निश्चित्य दीयते प्रतिपाद्यते व्याधिरनेनेति निदानम् ।
M.Ni 1/4 (Madhukoṣa)

Definitive measure used to diagnose the disease is called *nidāna.*

व्याधिनिश्चय कारणं निदानम् । *M.Ni 1/4 (Madhukoṣa)*

Process by which disease can be diagnosed is called *nidāna*.

निदीयते निबध्यते हेत्वादिसंबद्धो व्याधिरनेन ।
M.Ni 1/4 (Madhukoṣa)

Provides complete knowledge pertaining to etiology, symptomatology, pathogenesis etc. is known as *nidāna*.

रोगं निदान प्राग्रूपलक्षणोपशयाप्तिभिः । *A.Hr. Su 1/22*

Roga should be examined by *nidāna* (etiology), *pragṛūpa* (premonitory symptoms), *lakṣaṇa* (symptomatology), *upaśaya* (trial and error therapeutics), *āpti* (pathogenesis).

तत्र रुजतीति रोगः । तस्योपलब्धिर्निदान पूर्वरूपरूपोपशयसम्प्राप्तिभिः ॥ *A.S. Ni 1/6*

Suffering from misery is called roga. This can be examined by *nidāna, pūrvarupa, rupa, upaśaya* and *saṁprāpti*.

निदानं पूर्वरूपाणि रूपाण्युपशयस्तथा ।
संप्राप्तिश्चेति विज्ञानं रोगाणां पञ्चधा स्मृतम् ॥
A.Hr. Ni 1/2

Nidāna, pūrvarupa, rupa, upaśaya and *saṁprāpti* are the five means of diagnosis.

अत्र निदान शब्देन निदान पूर्वरूप ।
लिङ्गोपशय संप्राप्तयो विवक्षिताः ॥
C.S.Ni. 1/2 (Gaṅgādhara)

The word *nidāna* in respect to diagnosis includes *nidāna*, *pūrvarupa, liṅga, upaśaya* and *saṁprāpti*.

तत्र व्याधिजनकं निदानं हेतुः, व्याधिबोधकं च कारणं निदानपूर्वरूपरूपोपशयसम्प्राप्तिरूपम् ।
C.Ni. 1/5 (Cakrapāṇi)

Factors which are responsible for the causation of disease are known as *Hetu*.

Nidāna, pūrvarupa, rupa, upaśaya and *saṁprāpti* are the five means useful for the diagnosis of diseases.

षड्विध रोगी परीक्षा (Six fold examination)

त्रिभिरेतैर्विज्ञानोपायै रोगाः प्रायशो वेदितव्या इत्येके; तत्तु न सम्यक्, षड्विधो हि रोगाणां विज्ञानोपायः, तद्यथा पञ्चभिः श्रोत्रादिभिः प्रश्नेन चेति ॥ *S.Su 10/4*

It is not possible to acquire the complete knowledge by three fold examinations, that's why *Suśruta* described six fold examination technique for the diagnosis of diseases. These are five sense organs and history taking i.e.

1. *Sparśanendriya* (Organs of touch)
2. *Śrotrendriya* (Organs of hearing)
3. *Cakṣurindriya* (Organs of sight)
4. *Rasanendriya* (Organs of taste)
5. *Ghrāṇendriya* (Organs of smell)
6. *Praśna* (History taking)

अष्टविध रोगी परीक्षा (Eight fold examination technique)

रोगाक्रान्त शरीरस्य स्थानान्यष्टौ निरीक्षयेत् ।
नाडीं मूत्रं मलं जिह्वां शब्द स्पर्श दृगाकृति ।
Yogaratnākara

Nāḍī - Examination of Pulse
Mūtra - Examination of urine
Mala - Examination of stool
Jihvā - Examination of tongue
Śabda - Examination by organ of hearing
Sparśa - Palpation
Dṛk - Direct observation or inspection
Ākṛti - Examination of whole body

रोगीबल एवं रोग बल परीक्षा (Rogibala and Rogabala Parikṣā)

दशविध रोगीबल एवं रोग बल परीक्षा (Daśavidha Rogibala and Rogabala Parikṣā)

तस्मादातुरं परीक्षेत प्रकृतितश्च, विकृतितश्च, सारतश्च, संहननतश्च, प्रमाणतश्च, सात्म्यतश्च, सत्वतश्च, आहारशक्तितश्च, व्यायामशक्तितश्च, वयस्तश्चेति.... । *C.Vi 8/94*

1. *Prakṛti*- Identification of constitutions

2. *Vikṛti*- Morbidity of pathologic factors
3. *Sāra*- Examination of essence of *dhātus*
4. *Saṁhanana*- Examination of compactness of body organs.
5. *Pramāṇa*- Examination of measurement of body organs.
6. *Sātmya*- Examination of homologation
7. *Satva*- Examination of mental faculties
8. *Āhāra Śakti*- Examination for power of exercise
9. *Vyāyāma Śakti*- Examination for power of exercise
10. *Vaya*- Examination of age.

सुश्रुतोक्त द्वादश रोगीबल एवं रोग बल परीक्षा (Suśrutokta Dvādaśa Rogibala and Rogabala Parikṣā)

1. *Āyu*
2. *Vyādhi*
3. *Ṛtu*
4. *Agni*
5. *Vaya*
6. *Deha*
7. *Bala*
8. *Satva*
9. *Sātmya*
10. *Prakṛti*
11. *Bheṣaja*
12. *Deśa*

Importance of *Parīkṣā*

Various *Rogi Roga Parīkṣā* tools mentioned in the texts for the diagnosis of diseases .

Difference Between Rogi *Parīkṣā* and *Roga Parīkṣā*

No.	*Rogi Parīkṣā*	*Roga Parīkṣā*
1	It is done to diagnose the disease by using various tools	It is done to understand the evolution of disease by five means of diagnosis
2	Various examination tools mentioned namely *Dwividha, Trividha, Catūrvidha, Ṣaḍvidha, Aṣtasthāna Nirīkṣaṇa*	*Pañcavidha* tools namely *Hetu, Pūrvarūpa, Rūpa, Upaśaya* and *Samprāpti*
3	It is done by the Physician using the *Indriya* (sense organs) and *Praśna* (medical history)	This helps the physician to know the etiological factors, signs & symptoms etc are responsible for the diagnosis of disease
4	Medical history, clinical examination and ancillary investigations are the three important points covered under this to diagnose the disease	Based on the knowledge of five means it helps the physician to diagnose the disease
5	It gives information about the prognosis, *upadrava, ariṣṭa* etc	It also helps to know the strength of disease as well as prognosis

CHAPTER
3

Method of Rogi Pareeksha

द्विविध रोगी परीक्षा (Dvividha Rogī Parīkṣā)

द्विविधां परीक्षा ज्ञानवतां प्रत्यक्षमनुमानञ्च।

C.Vi 8/83

There are two methods namely *pratyakṣa* (perceptual) and *anumāna* (inferential).

प्रत्यक्ष परीक्षा (Pratyakṣa Parīkṣā)

अथ प्रत्यक्षं नाम तद्यदात्मना चेन्द्रियैश्च स्वयमुपलभ्यते, तत्रात्मप्रत्यक्षाः सुख दुःखेच्छाद्वेषादयः शब्दादयस्त्विान्द्रिय प्रत्यक्षाः ॥ *C.Vi 8/39*

Substances perceived by the self or through the sense organs may be included under direct observation. Examples are happiness, sorrow, desire, jealousy etc. are felt by the individual and sound etc. are perceived by the help of sense organs.

प्रत्यक्षं तु खलु तद्यत् स्वयमिन्द्रियैर्मनसा चोपलभ्यते।

C.Vi 4/4

Pratyakṣa is that which is obtained by an individual through his own sense organs and mind.

प्रत्यक्षस्तु खलु रोगतत्वं बुभुत्सुः सर्वैरिद्रियैः सर्वानिन्द्रियार्थानातुर शरीरगतान् परीक्षेत अन्यत्र रसज्ञानात्, तद्यथा आन्त्रकूजनं, सन्धिस्फुटन-मङ्गुलीपर्वणां च, स्वरविशेषांश्च, ये चान्येऽपि केचिच्छरीरोपगताः शब्दाः स्युस्ताच्छ्रोत्रेण परीक्षेत्; वर्ण संस्थान प्रमाणच्छ्याः, शरीर प्रकृतिविकारौ चक्षुर्वैषयिकाणि यानि चान्यान्य नुक्तानि तानि चक्षुषा परीक्षेत्; रसं तु खल्वातुरशरीरगत मिन्द्रियवैषयिक मप्यनुमानादवगच्छेत, न ह्यस्य प्रत्यक्षेण ग्रहणमुपपद्यते, तस्मादातुरपरिप्रश्नेननैवातुरमुखरसं विद्या, यूकापसर्पणेन त्वस्यशरीर वैरस्यं, मक्षिकोपसर्पणेन शरीरमाधुर्यं, लोहितपित्तसंदेहे तु किं धारिलोहितं लोहितपित्तं वेतिश्वकाकभक्षणाद्धारिलोहितमक्षणल्लोहितपित्तमित्यानुमातव्यम्, एवमन्या नप्यातुर शरीर गतान् रसाननुमिमीत; गन्धास्तु खलु सर्वशरीरगतानातुरस्य प्रकृति वैकारिकान् घ्राणेन परीक्षेत्; स्पर्शं च पाणिना प्रकृतिविकृतियुक्तम्। इति प्रत्यक्षतेऽनुमानादुपदेशतश्च परीक्षणमुक्तम् ॥ *C.Vi 4/07*

Physician desirous of examining specific findings of the disease by *pratyakṣa* by his sense organs and detecting the abnormality in the sense organ of the patient except the organ of taste.

Detection of findings by the organ of hearing are as follows–

- Gurgling sound in the abdomen
- Cracking and crepitation in big and small joints.
- Voice of patient
- Other abnormal sounds produced in various diseases like *hikkā, śvāsa, svara bheda, kāsa* etc.

Factors detected by organs of sight are as follows :

- Colour, shape, measurement and complexion.
- Natural & unnatural changes in body.
- Other findings examined visually like signs of the disease, lustre and other abnormalities.

Factors detected by organs of taste : Taste can be perceived by the gustatory sense organs and they can be ascertained by inference and not by direct observation. That's why taste in the mouth of patient may be obtained by interrogation.

Impairment of the taste of body should be inferred when lice etc. go away from the body. Sweetness of the body can be inferred when flies are attracted towards the body. If there is a bleeding from the body, then it should be checked by giving blood to dogs and crows to eat to check the nature of blood. If the blood consumed by dogs and crows it indicates it is pure blood and if it is rejected by them, then it indicates that blood is vitiated by *pitta* and patient may be suffering from *raktapitta*. Similarly other tastes in the patient's body can be inferred.

Factors detected by organs of smell : Normal and abnormal smells of the whole body may be detected by organ of smell.

Factors detected by organ of touch–

Normal and abnormal findings of touch may be examined by hand.

अनुमान परीक्षा (Anumāna Parīkṣā-Examination by Inference)

इमे तु खल्वन्येऽप्येवमेव भूयोऽनुमानज्ञेया भवन्ति भावाः। तद्यथा–अग्निं जरणशक्त्या परीक्षेत, बलं व्यायामशक्त्या, श्रोत्रादीनि शब्दाद्यर्थग्रहणेन, मनोऽर्थाव्यभिचरणेन,विज्ञानं व्यवसायेन, रजः सङ्गेन,मोहमविज्ञानेन, क्रोधमभिद्रोहेण, शोकं दैन्येन, हर्षमामोदेन, प्रीतिं तोषेण, भयं विषादेन, धैर्यमविषादेन, वीर्यमुत्थानेन, अवस्थानमविभ्रमेण,श्रद्धामभिप्रायेण, मेधां ग्रहणेन, संज्ञां नामग्रहणेन, स्मृतिं स्मरणेन ह्रियमपत्रपणेन, शीलमनुशीलनेन, द्वेषं प्रतिषेधेन, उपधिमनुबन्धेन, धृतिमलौल्येन, वश्यतां विधेयतया, वयोभक्तिसात्म्यव्याधिसमुत्थानानि कालदेशोपशयवेदनाविशेषेण, गूढलिङ्गं व्याधिमुपशयानुपशयाभ्यां, दोषप्रमाणविशेषमपचारविशेषेण, आयुषः क्षयमरिष्टैः, उपस्थित-श्रेयस्त्वं कल्याणाभिनिवेशेन, अमलं सत्त्वमविकारेण, ग्रहण्यास्तु मृदुदारुणत्वं स्वप्नदर्शनमभिप्रायं द्विष्टेष्टसुखदुःखानि चातुर-परिप्रश्नेनैव विद्यादिति ॥ *C.Vi 4/8*

Factors to be observed by *Anumāna* (inference) are :

1. *Agnim Jāraṇaśaktyā Parīkṣeta* - *Agni* (digestive fire)should be examined by the power of digestion
2. *Balam Vyāyāma Śaktyā* - Strength from the power for exercise
3. *Śrotrādini Śabdadyarthagrahaṇena* - Sense organs from their capacity to perceive the respective objects,
4. *Mano Artha Vyabhicaraṇena* - Mind perceptions are observed by its activities,
5. *Vijnānam Vyavasāyena* - Knowledge of a thing or understanding of effort,
6. *Rajaḥ Saṅgena* - *Raja* from the physician context with female
7. *Moham Avijnānena* - *Moha* (unconsciousness) from lack of understanding
8. *Krodham Abhidrohena* - Anger from the injuring (having other)
9. *Śokam Dainyena* - Grief from the sorrow feelings
10. *Harṣam Amodena* - Joy from happiness, indulgence in dancing, singing, playing musical instruments and remaining in festive mood,
11. *Pritim Toṣeṇa* - *Priti* (Pleasure) manifest from satisfaction
12. *Bhayam Viṣādena* - Fear manifest from worry/ anxiety
13. *Dhairyam Viṣādena* - Courage from strength of mind even in dangerous situation
14. *Viryam Utthānena* - Energy from progress
15. *Avasthānam Avibhrameṇa* - Stability of the mind from the avoidance of any mistake
16. *Śraddhām Abhiprāyeṇa* - Desire manifest from individual request
17. *Medhām Grahaṇena* - Intelligence from the power of comprehension of scriptures
18. *Sañjñam Nāmagrahaṇena* - Recognition from the recollection of the name
19. *Smṛtim Smaraṇena* - Memory from the recollection of the name
20. *Hṛyam Apatrapaṇena* - Shyness from bashfulness
21. *Śīlam Anuśīlanena* - Liking from habitual intake of things
22. *Dveṣam Pratiṣedhena* - Dislike from disinclination
23. *Upadhim Anubandhena* - Deception from subsequent manifestations
24. *Dhrutim Alaulyena* - Courage from firmness
25. *Vaśyatām Vidheyataya* - Obedience from compliance with orders
26. *Vayo Bhakti Sātmya Vyādhi Samutthānāni Kāla Deśa Upaśaya Vedana Viśeṣeṇa Vaya* (Age), *Bakti* (liking), *Sātmya* (homologation) and *Vyādhi Samutthānāni* (cause of the disease) from *Kāla* (the stage of the life), *Deśa* (habit), *Upaśaya* (wholesome) and *Vedana Viśeṣeṇa* (characteristic features of pain).
27. *Gūḍha Liṅgam Vyādhim Upāśaya Anupaśayābhyām* - Hidden sign of disease identified from suitability or otherwise,

28. *Doṣa Pramāṇa Viśeṣam Apacāra Viśeṣeṇa* - Quantity of *Doṣa* vitiation is inferred by amount of *Apathya* (unsuitable diet and lifestyle).
29. *Ayuṣaḥ Kṣaya Ariṣṭhaih* - *Ariṣṭa Lakṣaṇās* give a hint toward life expectancy
30. *Upastita Śreyastvam Kalyāṇa Abhiniveśena* - Promotion of *Sātvika* qualities of the mind from the absence of its impairments,
31. *Amala Satva Vikāreṇa*- pure mind is identified by absence of morbidity,
32. *Grahaṇyāstu Mṛdu Dāruṇatvam* - Softness is examined through *Koṣṭa Grahaṇī.*
33. *Svapna Darśana Abhiprāya Dviṣṭeṣṭa Sukha Duḥkhāni Catura Paripraś-nainaiva Vidhyāditi* - Dreams, desires for food etc. likes and dislikes, happiness and unhappiness etc. are known by *Praśna Parīkṣa* (interrogating the patient).

आप्तोपदेशादि त्रिविध रोगी परीक्षा (Āptopadeśādi Trividha Rogī Parīkṣā)

त्रिविधं खलु रोगविशेष विज्ञानं भवति; तद्यथा आप्तोपदेशः, प्रत्यक्षम्, अनुमानं चेति । *C.Vi 4/3*

Threefold skills for the examination of patient are *āptopadeśa* (authoritative instruction), *pratyakṣa* (direct observation) and *anumāna* (inferential).

1. Āptopadeśa (Scriptural knowledge)

तत्राप्तोपदेशो नामाप्तवचनम् । *C.Vi 4/4*

Āptopadeśa (preaching of saints / authoritative instructions) are the teachings of *Āptās* (persons who are reliable and truthful).

Āpta Lakṣaṇa (Features of truthful reliable person)

आप्ता ह्यवितर्कस्मृतिविभागविदो निष्प्रीत्युपतापदर्शिनश्च ।
C.Vi 4/4

Āpta persons possess knowledge devoid of any doubts and their memory is *Avitarka Smṛti* (unimpaired), i.e. they know things in their entirety by determinate experience. They see things without any attachment and aversion.

तेषामेवंगुणयोगाद्यद्वचनं तत् प्रमाणम् । अप्रमाणं पुनर्मत्तोन्मत्तमूर्खरक्तदुष्टादुष्टवचनमिति; *C.Vi 4/4*

Because of these qualities, their teaching is authentic. The statements made by intoxicated, mad, uneducated and attached persons are not to be considered as authoritative.

Examination of difficult aspect of diseases through Āptopadeśa

तत्रेदमुपदिशन्ति बुद्धिमन्तः रोगमेकैकमेवंप्रकोपणमेवंयोनिमेवमुत्थानमेवमात्मानमेवमधिष्ठानमेवं वेदनमेवंसंस्थानमेवंशब्दस्पर्शरूपरसगन्धमेयमुपद्रवमेवंवृद्धिस्थानक्षयसमन्वितमेवमुदर्कमेवंनामानमेवंयोगं विद्यात; तस्मिन्नियं प्रतीकारार्था प्रवृत्तिरथवा निवृत्तिरित्युपदेशाज्ज्ञायते । *C.Vi 4/6*

Learned physicians described the following features of each and every disease, *Prakopaṇa/ Vayoukṣatvādi Hetu* (Aggrevative factors like dry food intake etc. cause *Vāta Prakopa*), *Yoni Vātādya* (Pathogenic material / Source of *Doṣa* involved *Vāta, Pitta* and *Kapha*), *Utthāna* (etiology), *Ātma Svabhāva* (specific features e.g. *Rohiṇi* severity of disease), *Adhiṣṭāna/Āśraya* (site of disease manifestation e.g. *Śārīrika* and *Mānasika*), *Vedana* (Pain), *Saṃsthāna* (Symptoms), association with specific *Śabda* (sound), *Sparśa* (touch), *Rupa* (colours), *Rasa* (tastes) and *Gandha* (smell), *Upadrava* (Complications), *Vṛddhi* (types of aggravations), *Kṣaya* (static stage and diminished), *Samanvita* (maintenance), Prognosis, Names (nomenclature) etc. The type of preventive and curative and initiation of in treatment, all the known through *Āptopadeśa* (instructions of authoritative).

दर्शनादि त्रिविध रोगी परीक्षा (Darśanādi Trividha Rogī Parīkṣā)

चरकोक्त त्रिविध परीक्षा (Carakokta Trividha Parīkṣā)

दर्शनप्रश्नसंस्पर्शैः परीक्षा त्रिविधा स्मृता ।
वयोवर्णशरीराणामिन्द्रियाणां च दर्शनात् ॥
हेत्वर्तिसात्म्याग्निबलं परीक्ष्यं वचनाद्बुधैः ।
स्पर्शान्मार्दवशैत्ये च परीक्ष्यं सविपर्यये ॥
C.S.Ci. 25/22-23

Examination of *Vrṇa* (ulcer) is performed by three methods.

1. *Darśana* - Inspection
2. *Praśna* - interrogation
3. *Spraśa*- Palpation

I. Examined by Darśana Parikṣā (inspection)

1. *Vāya* - Age
2. *Varṇa* - Complexion and color
3. *Śarīra* - Body parts
4. *Indriya*- Sense Organs is examined by *Darśana* (inspection).

II. Examined by Praśna Parikṣā (interrogation)

1. *Hetu* - Etiology
2. *Arati* - Nature of pain
3. *Sātmya* - Suitability
4. *Agni Bala* - Power of digestion should be known by patient's statement.

III. Examined by Sparśana Parikṣā (palpation)

1. *Mārdava* - Softness
2. *Śaitya* - Coldness or heat in Vrna part of the body

सुश्रुतोक्त त्रिविध परीक्षा (Suśrutokta Trividha Parīkṣā)

त्रिभिरेतैर्विज्ञानोपायै रोगाः प्रायशो वेदितव्या इत्येके ।

S.S.Su. 10/4

त्रिभिरेतैरित्यादि त्रिभिरेतैर्विज्ञानोपायैरनन्तरोक्तैर्दर्शनस्पर्शन-प्रश्नैः । *S.S.Su. 10/4 Dalhaṇa*

Three methods of Examination :

1. *Darśana* - Inspection
2. *Praśna* - Interrogation
3. *Spraśa*- Palpation

दर्शनस्पर्शन प्रश्नैः परीक्षेत च रोगिणाम् ।

A.H.Su 1/22

Three fold examination techniques namely *darśan* (inspection), *sparśana* (palpation) and *praśna* (history taking).

दर्शन (Inspection)

दर्शनेन दृष्ट्या, कासमेहाद्यार्तेषु पीतशुक्लवर्ण संस्थान प्रमाणोपचयच्छाया विण्मूत्रच्छर्दितादिकम् ।

A.H.Su 1/21 (Sarvāṅga sundara)

Things identified by direct observation of patient either directly or indirectly is called *darśana parīkṣa*. In *darśana parīkṣā* following other *parīkṣa* may also be considered namely *pratyakṣa parīkṣā, cakṣurindriya parīkṣā, dṛk parīkṣā, ākṛti parīkṣā, jihvā parīkṣā* etc.

Darśana parīkṣā helps to detect the changes in colour, structure, size, shape, deformities etc.

स्पर्शन परीक्षा [Sparśana Parīkṣā (Palpation)]

स्पर्शनेन हस्तकायस्पर्शेन, ज्वरगुल्मविद्रध्याद्यार्तम्, तथा शीतोष्णस्तब्धस्पन्दश्लक्ष्णखरस्पर्शादिकं च ।

A.H.Su 1/21 (Sarvāṅga sundara)

It is an palpatory method helps to understand coldness, hotness, palpitations, coarsness, smoothness etc.

Under *sparśana parīkṣā* the following other examination tools may be included namely *sparśanendriya parīkṣā, nāḍi parikṣā, sparśa parīkṣā* etc. It is helpful in detecting the change of body temperature, organomegaly, consistency etc.

प्रश्न परीक्षा [Praśna Parikṣā (History taking)]

प्रश्नेन पृच्छया, शूलारोचकच्छर्दिहृदर्दत्वं सुच्छन्ददुश्छन्दत्वं मृदुक्रूर कोष्ठतां स्वप्नदर्शनमभिप्रायं जन्मामयप्रवृत्तिनक्षत्रद्विष्टेष्ट सुख दुःखानि च, इत्यातुर-मुखात्प्रीक्षेत् ॥

A.H.Su 1/21 (Sarvāṅga sundara)

Praśna parīkṣā is helpful to know about aggravating and relieving factors of diseases like *śūla* etc. along with it guides to understand about various kinds of *koṣṭha* (*mṛdu, madhya* and *krūra koṣṭha*)

In this other examination methods may also be included like *mūtra parīkṣā, mala parīkṣā, anumāna parīkṣā, āptopadeśa parīkṣā* etc. By this entire history taking methods like name, age, sex, occupation, address, chief complaints, history of present illness, past history family history, drug history, personal history may be taken into consideration.

चतुर्विध रोगी परीक्षा (Caturvidha Rogī Parīkṣā)

Pratyakṣa (direction observation), *anumāna* (inferential), *āptopadeśa* (authoritative instruction) and *yukti* (experimental evidence)

युक्ति परीक्षा (Yukti Parīkṣā)

अनुमानं खलु तर्को युक्त्यपेक्षः ॥ *C.Vi 4/4*

Anumāna (inference) is the indirect knowledge obtained by *Yukti* (reasoning) and *Tarka* (logic).

पञ्चविध रोगी परीक्षा (Pañcavidha Rogī Parīkṣā)

रोगं निदान प्राग्रूपलक्षणोपशयाप्तिभिः ।

A.Hr. Su 1/22

Roga should be examined by *nidāna* (etiology), *pragṛūpa* (premonitory symptoms), *lakṣaṇa* (symptomatology), *upaśaya* (trial and error therapeutics), *āpti* (pathogenesis).

तत्र रुजतीति रोगः ।
तस्योपलब्धिर्निदान पूर्वरूपरूपोपशयसम्प्राप्तिभिः ॥

A.S. Ni. 1/6

One which produces pain is called roga. This can be examined by *nidāna, pūrurupa, rupa, upaśaya* and *saṁprāpti*.

निदानं पूर्वरूपाणि रूपाण्युपशयस्तथा ।
संप्राप्तिश्चेति विज्ञानं रोगाणां पञ्चधा स्मृतम् ॥

A.Hr. Ni 1/2

Nidānaa, pūrvarupa, rupa, upaśaya and *saṁprāpti* are the five means of diagnosis.

अत्र निदान शब्देन निदान पूर्वरूप ।
लिङ्गोपशय संप्राप्तयो विवक्षिताः ॥

C. Ni. 1/2 (Gaṅgādhara)

The word *nidāna* in respect to diagnosis includes *nidāna, pūrvarupa, liṅga, upaśaya* and *saṁprāpti*.

अतः सामान्येन व्याधिज्ञानोपाय निदान पंचकाभिधानम् ॥

C.Ni. 1/5 (Cakrapāṇi)

Five means of diagnosis helps for the diagnosis of diseases.

षड्विध रोगी परीक्षा (Ṣaḍvidha Rogī Parīkṣā)

त्रिभिरेतैर्विज्ञानोपायै रोगाः प्रायशो वेदितव्या इत्येके; तत्तु न सम्यक्, षड्विधो हि रोगाणां विज्ञानोपायः, तद्यथा पञ्चभिः श्रोत्रादिभिः प्रश्नेन चेति ॥ *S.Su 10/4*

It is not possible to acquire the complete knowledge by three fold examinations, that's why *Suśruta* described six fold examination technique for the diagnosis of diseases. These are five sense organs and history taking i.e.

1. *Sparśanendriya* (Organs of touch)
2. *Śrotrendriya* (Organs of hearing)
3. *Cakṣurindriya* (Organs of sight)
4. *Rasanendriya* (Organs of taste)
5. *Ghrāṇendriya* (Organs of smell)
6. *Praśna* (History taking)

1. श्रोत्रेन्द्रिय परीक्षा (Examination by Hearing)

तत्र श्रोत्रेन्द्रियविज्ञेया विशेषा रोगेषु व्रणस्त्राव विज्ञानीयादिषु वक्ष्यन्ते– तत्र सफेनं रक्तमीरयन्ननिलः सशब्दो निर्गच्छति इत्येवमादयः । *S.Su 10/5*

This method of examination helps to elicit the abnormalities in various diseases by hearing. For example, if foreign body lodged in *dhamani* (blood vessels) leading to excacerbation and agitation of *vāta* resulting into flow of frothy blood associated with sound, pain all over the body, thirst and nausea.

Detection by hearing	Name of the disease
स्वर भेद *(Svara bheda)* (Change of voice or Hoarsenes of voice)	वातज छर्दि *(Vātaja chardi)* वातज कास *(Vātaja kāsa)* रक्तपित्त *(Raktapitta)* पाण्डु उपद्रव *(Pāṇḍu upadrava)* तृष्णा उपद्रव *(Tṛṣṇā upadrava)* क्षयज कास *(Kṣayaja kāsa)* अलसक असाध्य लक्षण *(Alasaka asādya lakṣaṇa)* अर्दित *(Ardita)* वातज छर्दि *(Vātaja chardi)* धातुक्षयज दाह *(Dhātukṣayaja dāha)* गलगण्ड असाध्य लक्षण *(Galagaṇḍa asādhya lakṣaṇa)* जराशोष *(Jarāśoṣa)* अभिन्यास ज्वर *(Abhinyāṣa jvara)* क्षतज कास *(Kṣataja kāsa)*

	कुष्ठ असाध्य लक्षण (*Kuṣṭha asādhya lakṣaṇa*) अस्थिगत कुष्ठ (*Asthigata kuṣṭha*) मज्जागत कुष्ठ (*Majjāgata kuṣṭha*) कुष्ठसामान्य लक्षण (*Kuṣṭha sāmānya lakṣaṇa*) पीनस (*Pīnasa*) वातज प्रतिश्याय (*Vātaja pratiśyāya*) राजयक्ष्मा असाध्य लक्षण (*Rājayakṣmā asādya lakṣaṇa*) राजयक्ष्मा रूप (*Rājayakṣmā rupa*) सर्पदंश असाध्य लक्षण (*Sarpadaṁśa asādhya lakṣaṇa*) वातज स्तन्यपानज बालरोग (*Vātaja stanya pānaja bāla roga*) स्वर भेद रोग (*Svara bheda roga*) स्वरघ्न (*Svaraghna*) उपसर्गज तृष्णा (*Upasargaja tṛṣṇā*) विषज उन्माद (*Viṣaja unmāda*) विलम्बिका असाध्य लक्षण (*Vilambikā asādhya lakṣaṇa*) हतस्वर (*Hata svara*) क्षामस्वर (*Kṣāma svara*) स्वरभिन्न (*Svara bhinna*) स्वरोपघात (*Svaropaghāta*) दीनस्वर (*Dinasvara*)
अणु स्वर (*Aṇu svara*) (Feeble voice)	मेदज गलगण्ड (*Medaja galagaṇḍa*)
गार्दभवत् स्वर (*Gārdabhavat svara*) (Voice like donkey)	वातज स्वरभेद (*Vātaja svarabheda*)
खर स्वर (*Khara svara*) (Harsh voice)	वातज स्वरभेद (*Vātaja svarbheda*)
क्षाम स्वर (*Kṣamā svara*) (Shabby voice)	अलसक असाध्य लक्षण (*Alasaka asādhya lakṣaṇa*) धातु क्षयज दाह (*Dhātu kṣayaja dāha*) पीनस आमलक्षण (*Pīnasa āmalakṣaṇa*) वातज स्तन्यपानज बालरोग (*Vātaja stanyapānaj bālaroga*)
स्वर क्षय (*Svara kṣaya*) (Meager voice)	वातज कास (*Vātaja kāsa*)
शनै स्वर (*Śanai svara*) (Slow voice)	वातज स्वरभेद (*Vātaja svarabheda*)
पारावत इव कूजन (*Pārāvata iva kūjana*) (Voice like pigeon)	क्षतज कास (*Kṣataja kāsa*)
स्वरहानि (*Svarahāni*)	स्त्री सर्पदष्ट (*Strī sarpa daṣṭa*)
स्वरामय (*Svarāmaya*) (Loss of speech)	पित्तज कास (*Pittaja kāsa*)
वैस्वर्यम (*Vaisvaryam*) (Abnormal voice)	पित्तज कास (*Pittaja kāsa*) क्षयज कास (*Kṣayaja kāsa*) दुष्ट प्रतिश्याय (*Duṣṭa pratiśyāya*)
दीन स्वर (*Dina svara*) (Feeble voice)	उपसर्गज तृष्णा (*Upasargaja tṛṣṇā*)
भिन्न कांस्य स्वर (*Bhinna kāṁsya svara*) (Voice like broken)	कास (*Kāsa*)
भिन्न स्वर (*Bhinna svara*) (Change of voice)	असाध्य गलगण्ड (*Asādya galagaṇḍa*) उरः क्षत (*Uraḥ kṣata*) अर्दित (*Ardita*)
हतस्वर (*Hata svara*) (Slow voice)	असाध्यकुष्ठ (*Asādya kuṣṭa*) अभिन्यासज्वर (*Abhinyāsa-jvara*) ऊर्ध्वश्वास (*Ūrdhvaśvāsa*)
स्वरोपघात (*Svaropaghāta*) (Loss of speech)	अस्थिमज्जागत कुष्ठ (*Aśthi majjāgata kuṣṭa*) वातज प्रतिश्याय (*Vātaja pratiśyāya*)
रुक्ष स्वर (*Rukṣa svara*) (Harsh voice)	पिशाचोन्माद (*Piśaconmāda*)
स्वर क्षय (*Svara kṣaya*) (Feeble voice)	कफज पाण्डु (*Kaphaja pāṇḍu*)
विकृत स्वर (*Vikṛta svara*) (Abnormal voice)	मध्यज मद (*Madyaja mada*)
अव्यक्त स्वर (*Avyakta svara*) Voice not clear	मध्य मदारिष्ठ (*Madya madāriṣṭa*)
अल्प स्वर (*Alpa svara*) (Less speech condition)	कफोन्माद (*Kaphonmāda*) यक्षोन्माद (*Yakṣonmāda*) पाण्डु (*Pāṇḍu*)
वाक् स्तम्भ (*Vak Stambha*)	अर्दित (*Ardita*)

(Loss of speech)	पक्षाघात *(Pakṣāghāta)* महाहिक्का *(Mahāhikkā)*
प्रलाप *(Pralāpa)* (Delirium)	भयजज्वर *(Bhayajajvara)* शोकजज्वर *(Śokajajvara)* रक्तगतज्वर *(Raktagatajvara)* मेदोगतज्वर *(Medogatajvara)* वातज्वर *(Vātajvara)* पित्तज्वर *(Pittajvara)* सन्निपातिकज्वर *(Sannipātikajvara)* असाध्यज्वर *(Asādyajvara)* छिन्नश्वास *(Chinnaśvāsa)* ओजःक्षय *(Ojaḥkṣaya)* अभिन्यासज्वर *(Abhinyāsajvara)* यमला हिक्का *(Yamalā hikkā)* अजीर्ण उपद्रव *(Ajīrṇa upadrava)* वातज आम्लपत्ति *(Vātaja āmlapitta)* असृग्धर उपद्रव *(Asṛgdhara upadrava)* अतिसार असाध्य लक्षण *(Atisāra asādhya lakṣaṇa)* क्षतज दाह *(Kṣataja dāha)* अन्तर्वेग ज्वर *(Antarvega jvara)* बहिर्वेग ज्वर *(Bahirvega jvara)* वातज मदात्यय *(Vātaja madātyaya)* त्रिदोषज मसूरिका *(Tridoṣaja masūrikā)* मूल विष *(Mūla viṣa)* मद्यज मूर्च्छा *(Madyaja mūrcchā)* पित्तज तृष्णा *(Pittaja tṛṣṇā)* वातव्याधि पूर्वरूप *(Vātavyādhi pūrvarupa)* त्रिदोषज विस्फोट *(Tridoṣaja visphoṭa)* मर्माघात व्रण *(Marmāghāta vraṇa)*
अतिवाक् *(Ativāk)* (Excessive talk)	वातपित्त ज्वर *(Vāta pitta jvara)*

आर्हतमाध्मातदृति शब्दवद्भवति *(Āhantamādmātadṛti śabdavadbhavati)*	वातोदर *(Vātodara)*
सशूलशब्द *(Saśūla śabda)* (Painful speech)	वातोदर *(Vātodara)*
आटोप *(Āṭopa)* (Gurgling noise in the abdomen)	उदर *(Udara)* गुल्म पूर्वरूप *(Gulma pūrvarupa)* पुरीषज उदावर्त *(Puriṣaja udāvarta)* अपस्मार पूर्वरूप *(Apasmāra pūrvarupa)* आमातिसार *(Āmātisāra)* कुक्षि विद्राधि *(Kukṣi vidradhi)* वातज गुल्म *(Vātaja gulma)* आध्मान *(Ādhmāna)* आमज शूल *(Āmaja śūla)* अर्श पूर्वरूप *(Arśa pūrvarupa)* हिक्का पूर्वरूप *(Hikkā pūrvarupa)* पक्वाशयगतवात *(Pakvāśayagatavāta)* वातज परिणामशूल *(Vātaja pariṇāmaśūla)* नाभि विद्रधि *(Nābhi vidradhi)*
आध्मान *(Ādhmāna)* (Distension of abdomen tympanitis)	बद्धगुदोदर *(Baddhagudodara)* यमला हिक्का *(Yamalā hikkā)* कफज तृष्णा *(Kaphaja tṛṣṇā)* आमज तृष्णा *(Āmaja Tṛṣṇā)* उदावर्त *(Udāvarta)* वातज ग्रहणी दोष *(Vātaja grahaṇī doṣa)* आध्मान रोग *(Ādhmāna roga)* पुष्पविष *(Puṣpa viṣa)* उदररोग *(Udararoga)* आमाशय व्रण *(Āmaśaya vraṇa)* अन्तर्विद्राधि असाध्य लक्षण *(Āntarvidradhi asādya lakṣaṇa)* अश्मरी पूर्वरूप *(Āṣmari pūrvarupa)* अष्ठीला *(Aṣṭhīlā)* अतिसार पूर्वरूप *(Ātisāra Pūrv-*

	arupa) गरविष *(Garaviṣa)* गुदगत वात *(Gudagata vāta)* गुल्मरोग पूर्वरूप *(Gulmaroga pūrvarupa)* वातज ज्वर *(Vātaja jvara)* कोष्ठ व्रण *(Koṣṭa vraṇa)* शकृद्विघातज मूत्रकृच्छ *(Śakṛd-vighātaja mūtrakṛcchra)* मूत्रजठर *(Mūtrajaṭhara)* पानाजीर्ण लक्षण *(Pānājīrṇa lakṣaṇa)* वातज परिणामशूल *(Vātajapariṇāmaśūla)* प्रत्याध्मान *(Pratyādhmāna)* श्वासरोग पूर्वरूप *(Śvāsarogapūrva-rupa)* वातज उदररोग *(Vātaja udararoga)* वातव्याधि उपद्रव *(Vātavyādhi upadrava)* विष्टब्धाजीर्ण *(Viṣṭabdhājīrṇa)*
आन्त्रकूजन *(Āntrakūjana)* (Intestinal Gurgling)	वातजकास *(Vātaja kāsa)* ग्रहणीदोष पूर्वरूप *(Grahaṇīdoṣa pūrvarupa* सन्निपातिक ग्रहणीदोष *(Sannipātika grahaṇīdoṣa)* गुल्मरोग पूर्वरूप *(Gulmaroga pūrvarupa)* सहज अर्श *(Sahaja arśa)* अर्श पूर्वरूप *(Arśa pūrvarupa)* वातातिसार *(Vātātisāra)* मन्दाग्नि *(Mandāgni)* आमवात *(Āmavāta)* गुल्मरोग सामान्य लक्षण *(Gulmaroga sāmanyalakṣaṇa)* पक्वाशयगतवात *(Pakvaśayagatavāta)*

2. स्पर्शनेन्द्रिय परीक्षा (Examination by Touch)

स्पर्शनेन्द्रिय विज्ञेयाः शीतोष्ण श्लक्ष्णकर्कश मृदुकठिनत्वादयः स्पर्शविशेषा ज्वरशोफादिषु । *S.Su 10/5*

Things detected with the help of touch are as follows– cold, heat, smoothness, roughness, softness, hardness etc.

For Example–

- उष्ण स्पर्श *(usṇa sparśa)* observed in ज्वर *(jvara)*
- मृदु स्पर्श *(mṛdu sparśa)* observed in पित्तोदर *(pittodara)*
- स्थिर, कठिण उदर *(Sthira, kaṭhiṇa udara)* observed in कफोदर *(kaphodara)*

प्लीहा कठिणोऽष्ठीलेवादौ वर्धमानः कच्छपसंस्थान उपलभ्यते, स चोपेक्षितः क्रमेण कुक्षि जठर मग्न्याधिष्ठानं च परिक्षिपन्नुदरमभिनिर्वर्तयति । *C.Ci 13/37*

In case of *plīhodar* spleen becomes enlarged, it become like a stony piece initially and gradually enlarges to become like a tortoise. It neglected, it gradually overlaps belly, abdomen and pancreas.

धमनी सोष्णा वेगवती *(Dhamanī soṣṇā Vegavati)* (Warm & Rapid pulse)	ज्वर *(Jvara)*
नाडी मन्दतरा *(Nāḍī mandatarā)* (Slow pulse)	मन्दाग्नि *(Mandāgni)* क्षीणधातु *(Kṣiṇadhātu)*
स्थिरा एवं बलवती *(Sthirā evaṁ balavati)* (Stable & forceful pulse)	सुखितस्य *(Sukhitasya)*
मुदकपूर्णद्वतिक्षोभसंस्पर्शं भवति *(Mudakapūrṇadvatikṣobha saṁsparśam bhavati)* (Fluctation like leather bag filled with water)	उदकोदर *(Udakodara)*
परिपिण्डितत्वात् स्पर्शोपलभ्यः *(Paripiṇḍitatvāt sparśopa labhyaḥ)* (Palpable rounded mass)	गुल्म *(Gulma)*
दुःख स्पर्श *(Dukha sparśa)* (Tendeness)	क्षतज कास *(Kṣataja kāsa)*
स्पर्शाज्ञत्वमिति *(Sparśājñatvamiti)* (Loss of sensation)	कुष्ठ पूर्वरूप *(Kuṣṭha pūrvarupa)*
बहलं हस्तिचर्मवत् *(Bahalaṁ hasticarmavat)* (Coarse to ach like skin of elephant)	चर्मारव्य कुष्ठ *(Carmākhya kuṣṭha)*
किण खर स्पर्शं परुषं *(Kiṇa khara sparśaṁ paruṣam)*	किटिभ कुष्ठ *(Kiṭibha kuṣṭha)*

(Skin rough like corn) संस्पर्शासहमुच्यते *(Saṁsparśāsahamucyate),* (Tenderness)	चर्मदल *(Carmadala)*

3. चक्षुरिन्द्रिय परीक्षा (Examination by Sight)

चक्षुरिन्द्रिय विज्ञेयाः शरीरोपचयापचयायुर्लक्षण बल वर्ण विकारादयः । *S.Su 10/5*

The following things can be detected through the examination by sight are increase or decrease of the body, signs of life span, change in strength and colour etc.

शरीरोपचयेति उपचयः स्थौल्यं, अपचयः कार्श्यं, बलमत्र उत्साह । *S.Su 10/5 (Dalhaṇa)*

Upacaya means obesity, *Apacaya* refers to emaciation, *bala* refers to loss of enthusiasm.

आविल नेत्र *(Āvila netra)* (Congestion in eye)	अर्दित पूर्वरूप *(Ardita pūrvarupa)*
हारिद्र नेत्रता *(Hāridra netratā)* (Deep yellow colouration of eye)	पित्तज अर्श *(Pittaja arśa)* कामला असाध्यलक्षण *(Kāmalā asādhyalakṣaṇa)*
नेत्र हुण्डन *(Netra huṇḍana)* (Carvature of eye)	वातव्याधि पूर्वरूप *(Vātavyādhi pūrvarupa)*
अक्षिकूट शोथ *(Akṣikūṭa śotha)* (Edema of eye)	आमाजीर्ण *(Āmājīrṇa)* मृद्भक्षणजन्यपाण्डु *(Mridbhakṣaṇajanya pāṇḍu)* पाण्डु पूर्वरूप *(Pāṇḍu pūrvarupa)* कफज शिरःशूल *(Kaphaja śiraḥśūla)*
अक्षिराग *(Akṣirāga)* or अक्षिरक्तता *(Akṣiraktatā)* or रक्त नेत्र *(Rakta netra)* (Red eye or reddish colouration of eye)	रक्तज अभिष्यन्द *(Raktaja Abhiṣyanda)* कामला असाध्य लक्षण *(Kāmalā asādhya lakṣaṇa* कोष्ठ व्रण *(Koṣṭha vraṇa)* कुष्ठ असाध्य लक्षण *(Kuṣṭha asādhya lakṣaṇa)* अस्थिमज्जागत कुष्ठ *(Asthimajjāgata kuṣṭha)* मदात्यय असाध्य लक्षण *(Madātyaya asādhya lakṣaṇa)* पित्तज मसूरिका *(Pittaja masūrikā)* मसूरिका पूर्वरूप *(Masūrikā pūrvarupa)* रक्तज मसूरिका *(Raktaja masūrikā)* वातज पण्डु *(Vātaja pāṇḍu)* शंखक *(Śankhaka)* शीतपित्तपूर्वरूप *(Śitapitta pūrvarupa)* पित्तज शोथ *(Pittaja śotha)* पित्तज तृष्णा *(Pittaja tṛṣṇā)* विषज उन्माद *(Viṣaja unmāda)*
निस्तेज नेत्र *(Nisteja netra)* (Lustureless eyes)	पाण्डु *(Pāṇḍu)* जीर्णज्वर *(Jīrṇa jvara)*
शुनाक्षिशोथ *(Śūnākṣiśotha)* (Edema of eye)	मृद्भक्षणजन्य पाण्डु *(Mṛdbhakṣaṇajanya pāṇḍu)*
विभ्रान्तलोचन *(Vibhrāntal-* (Eyes begin to roll)	महाश्वास *(Mahāśvāsa)* *ocana)*
रक्तैकलोचन *(Raktaikalocana)* (Redness of one eye)	छिन्नश्वास *(Chinnaśvāsa)*
विष्टब्धाक्ष *(Viṣṭabdhākṣa)* (Static gaze)	अन्तरायाम *(Antarāyāma)* बहिरायाम *(Bahirāyāma)*
विकृत ऊर्ध्वनिरीक्षण *(Vikṛta Ūrdhvanirīkṣaṇa)* (Abnormal up & roll fixed gaze)	मन्यास्तम्भ *(Manyāstambha)*
अक्ष्णो श्वयथु *(Akṣṇo śvayathu)* (Edena of eye)	अर्श *(Arśa)*
श्यावारूण नयन *(Syāvāruṇa Nayana)* (Reddish black eye)	उदर *(Udara)*
चक्षुषो आकुलत्व *(Cakṣuṣo Ākulatva)* (Rapid eye movement)	विसर्प *(Visarpa)*
अक्ष्णो श्वेतावभासतां अतिमात्र *(Akṣṇo śvetāvabhāsatā Atimātraṁ)* (Excessive whitish discolouration of eye)	राजयक्ष्मा *(Rājayakṣmā)*
श्वेतपीतलोचन *(Śvetapīta locana)* (Whitish yellow discoloration of eye)	पाण्डु *(Pāṇḍu)*
स्तब्ध दृष्टि *(Stabdha dṛṣti)*	मूर्च्छा *(Mūrcchā)*

(Fixed gaze)	
नाभ्युपरि गोपुच्छवदभिनिर्वर्तत *(Nabhyūpari gopucchavadabhinirvartat)* Growth like cows tait over umbilical region	बद्धगुदोदर *(Baddhagudodara)*
कुक्षेरतिमात्र वृद्धि *(Kukṣeratimātra vṛddhi)* Excessive abdominal growth	जलोदर *(Jalodara)*
वक्रीकरोतिनासाभ्रूललाटाक्षिहनु *(Vakrikarotināsābhrūlalāṭākṣihanu)* Distortion in nose, eye brows, forehead, eye & mendible	अर्दित *(Ardita)*
ऊर्ध्व दृष्टि *(Ūrdva dṛṣṭi)* (Eye fixed upwards)	हिक्का असाध्य लक्षण *(Hikkā asādhya lakṣaṇa)* ऊर्ध्वश्वास *(Ūrdvaśvāsa)*
दृष्टि विपर्यय *(Dṛṣṭi viparyaya)* (Abnormal fixed gaze up & rolling)	ऊर्ध्वश्वास *(Ūrdhvaśvāsa)*
कृष्णनेत्रता *(Kṛṣṇa netratā)* Blackdiscoloration of eye	वातज अर्श *(Vātaja Arśa)* कामला असाध्य लक्षण *(Kāmalā asādhya lakṣaṇa)* वातज पाण्डु *(Vātaja pāṇḍu)* वातज स्वरभेद *(Vātaja svarabheda)*
पाण्डु नेत्रता *(Pāṇḍu netratā)* Whitish discoloration of eye	कफज अर्श *(Kaphaja arśa)* पानकि *(Pānaki)* पाण्डु असाध्य लक्षण *(Pāṇḍu asādhya lakṣaṇa)*
पीतनेत्रता *(Pītanetratā)* Yellowish discoloration of eye	कामला *(Kāmalā)* पित्तज ज्वर *(Pittaja jvara)* पित्तज पाण्डु *(Pittaja pāṇḍu)* मदात्यय असाध्य लक्षण *(Madātyaya asādhya lakṣaṇa)* पित्तज स्वरभेद *(Pittaja svarabheda)*
रक्तपीत शकृन्मूत्र *(Raktapita śakṛnmūtra)* Reddish yellow discolor of stool urine	कामला *(Kāmalā)*
रुक्ष नेत्र *(Rūkṣa netra)* (Dry eyes)	वातज पाण्डु *(Vātaja pāṇḍu)*

4. रसनेन्द्रिय परीक्षा (Examination by Taste)

रसनेन्द्रिय विज्ञेयाः प्रमेहादिषु रसविशेषाः ।
S.Sū 10/5

By inference one can ascertain the vitiation in *rasanendriya.* For example if bees flies attracted towards *prameha* patient, it indicates *tanumādhuryatā* of *prameha rogi.*

अरोचक *(Arocaka)* *Or* अरुचि *(Aruci)* Anorexia	आमवात उपद्रव *(Āmavāta upadrava)* कफपित्तज अम्लपित्त *(Kaphapittaja amlapitta)* अम्लपित्त लक्षण *(Amlapitta lakṣaṇa)* अरोचक रोग *(Arocaka roga)* कफज अर्श *(Kaphaja arśa)* अर्श उपद्रव *(Arśa upadrava)* वातज अर्श *(Vātaja arśa)* अश्मरी पूर्वरूप *(Aśmarī pūrvarupa)* कफज छर्दि *(Kaphaja chardi)* छर्दि पुर्वरूप *(Chardi pūrvarupa)* सन्निपातज छर्दि *(Sannipātaja chardi)* दूषिविष लक्षण *(Duṣiviṣa lakṣaṇa)* ग्रहणी दोष *(Grahaṇī doṣa)* वातकफज गृध्रसि *(Vātakaphaja gṛdhrasi)* कफज गुल्मरोग *(Kaphaja gulma roga)* हलीमक *(Halīmaka)* कफज हृद्रोग *(Kaphaja hṛdroga)* जराशोष *(Jarāśoṣa)* ज्वर *(Jvara)* कामला *(Kāmalā)* कृमि *(Kṛmi)* मसूरिका *(Masūrikā)*
आस्यमाधुर्य *(Āsyamādhurya)* (Feeling of sweet taste in mouth	कफपित्तज आम्लपित्त *(Kapha pittaja āmlapitta)* कफज अरोचक *(Kaphaja*

	arocaka) कफज छर्दि रोग *(Kaphaja chardiroga)* कफज गलगण्ड *(Kaphaja galagaṇḍa)* कफज ग्रहणीदोष *(Kaphaja grahaṇī doṣa)* कफज हृद्रोग *(Kaphaja hṛdroga)* कफज ज्वर *(Kaphaja jvara)* प्रमेह पूर्वरूप *(Prameha pūrvarupa)* कफज तृष्णा *(Kaphaja tṛṣṇā)*
आस्य वैरस्य *(Āsya vairasya)* Distaste in mouth	प्रवृद्ध आमवात *(Pravṛddha āmavāta)* अरोचक *(Arocaka)* ज्वर *(Jvara)* कास *(Kāsa)* उदर *(Udara)*
असित जिह्वा *(Asita Jihvā)* (Black discoloration of tongue)	मदात्यय असाध्य लक्षण *(Madātyaya asādhya lakṣaṇa)*
जिह्वा लेप *(Jihvā lepa)* Coating over tongue	कफज अम्लपित्त *(Kaphaja amlapitta)*
नीलजिह्वा *(Nīla jihvā)* Bluish coloration of tongue	मदात्यय असाध्य लक्षण *(Madātyaya asādhya lakṣaṇa)*
जिह्वा निष्कर्ष्य *(Jihvā niṣkarṣya)* (Prolapse of tongue)	तृष्णा निरोधज दाह *(Tṛṣṇā nirodhaja dāha)*
जिह्वा शोष *(Jihvā soṣa)* (Dryness of tongue)	तृष्णा निरोधज दाह *(Tṛṣṇā nirodhaja dāha)*
जिह्वास्तम्भ *(Jihvāstambha)* (Loss of movement of tongue)	जिह्वास्तम्भ *(Jihvāstambha)*
जिह्वाउपदेह *(Jihvāupadeha)* (Glossitis)	प्रमेह पूर्वरूप *(Prameha pūrvarupa)*
जिह्वा वेपन *(Jihvā vepana)* (Tremor of tongue)	तृष्णानिरोधज दाह *(Tṛṣṇā nirodhaja dāha)*

5. घ्राणेन्द्रिय परीक्षा (Examination by Smell)

घ्राणेन्द्रिय विज्ञेया अरिष्टलिङ्गादिषु, व्रणानामव्रणानां च गन्धविशेषाः । *S.Su 10/5*

Diagnosis of the diseases based on abnormal smell, which emits either from wounds or non wounded region.

गन्धनाश *(Gandha nāśa)* (Loss of sense of smell)	अपीनस *(Apīnasa)* अभिन्यास ज्वर *(Abhinyāsa jvara)* दुष्ट प्रतिश्याय *(Duṣṭa pratiśyāya)* रक्तज प्रतिश्याय *(Raktaja pratiśyāya)* प्रतिश्याय उपद्रव *(Pratiśyāya upadrava)* वृश्चिकादंश असाध्य लक्षण *(Vṛscikādaṁśa asādhya lakṣaṇa)*
गात्र दौर्गन्ध्य *(Gātradaurgandhya)* (Bad smell in body)	कोष्ठ व्रण *(Koṣṭha vraṇa)* मेदो रोग *(Medo roga)*
आस्य पुतित *(Āsya Pūtita)* (Bad smell in mouth)	पित्तज आरोचक *(Pittaja ārocaka)*
दुर्गन्ध कफ *(Durgandha kapha)* (Bad smelling cough)	पूतिनस्य *(Pūtinasya)* क्षयज कास *(Kṣayaja kāsa)*

संयोगाद्दूषणात्तत्तु सामान्याद्गन्धवर्णयोः ।
रक्तस्य पित्तमाख्यातं रक्तपित्त......॥
C.Ci 4/9

When *pitta* amalgamates with morbid *raktadhātu,* it attains its colour and smell is called *raktapitta.*

लोहगन्धिश्चनिःश्वास *(Lohagandhischanihśvāsa)* (Metallic odour during expiration)	रक्तपित्त पूर्वरूप *(Raktapitta pūrvarupa)*
कौण्यं *(Kauṇyam)*	मेदगत कुष्ठ *(Medagata kuṣṭha)*
अंङ्ग लोहगन्ध *(Aṅga lohagandha)* (Metallic smell in body parts)	रक्तज दाह *(Raktaja dāha)*

6. प्रश्न परीक्षा (Examination by Interrogation)

प्रश्नेन च विजानीयाद्देशं कालं जातिं साम्त्यमातङ्कं समुत्पत्तिं वेदना समुच्छ्रायं बलमन्तरग्निं वातमूत्र पुरीषाणां प्रवृत्तिमप्रवृत्तिं कालप्रकर्षादींश्च विशेषान् । आत्मसदृशेषु विज्ञानाभ्युपायेषु तत्स्थानीयैर्जानीयात् ॥ S.Su 10/5

Things obtained by interrogation are as follows : Place, time (season), caste, conduciveness, how the symptoms manifested, aggravation and relieving factors, strength and nature of *agni*, eliminations or non elimination of flatus, urine, stool, duration of the diseases (time factors for excacerbation of disease) etc. Such other things may be collected from persons residing with or close relative of the patient.

Deśa: Whether person belongs to *jāṅghaladeśa, ānūpa deśa* and *sādhāraṇa deśa.*

Jāti refers to various religions like *bhrāmaṇa, kṣātriya* etc. *kāla* is divided into two i.e. *nityaga* and *āvasthika*. *Nityaga* comprises *ṛtu lakṣaṇa*, day night etc.

Āvasthika is again subdivided into two i.e. *svasthasya bālyādi bhedena* and *vyādhitasya jvarārambhādi kālāvasthā*.

1. *Svasthasya bālyādi bhedena*– In this understanding of age like children, youth, old age person.
2. *Vyādhitasya jvarārambhādi kālāvasthā.* It signifies about the onset and history of diseases.

सात्म्यमिति यद्यस्य सेवितं सत् सुखाय संपद्यते तत्तस्य सात्म्यं; तच्चद्विविधं चेष्टाख्यमाहाराख्यां च; चेष्टाख्यं काय वाक्मनो-भेदात्रिविधम् आहाराख्यं रसभेदात् षड्विधम् ।

S.Su 10/5 (Dalhaṇa)

Sātmya means which gives conduciveness and comfortness to body. Which is divided into two types namely *ceṣṭākhya* and *āhārākhya*. *Ceṣṭākhya* describes functions attributed to body, speech, and mind. *Āhārākhya* means 6 kinds of taste.

आतङ्कसमुत्पत्ति समुत्पत्तिः कारणमुच्यते ।

S.Su 10/5 (Dalhaṇa)

Causative factors of the disease is called *ātaṅka samutpatti.*

वेदनासमुच्छ्रायमिति वेदना वातादिवेदनास्तोदादयः, तासां समुच्छ्राय उद्गतिः । *Dalhaṇa*

Vedanā samucchrāya means description of various kinds of pains resulting due to *vātādi doṣās*.

बलं व्यायामगम्य शक्तिः । *Dalhaṇa*

Bala can be elicited by exercise endurance.

अन्तरग्निमिति समो विषमो मन्दो वा । *Dalhaṇa*

Antarāgni means condition of *agni* whether it is normal, abnormal or dull.

अष्टस्थान निरीक्षण (Eight folds of Examination)

रोगाक्रान्त शरीरस्य स्थानान्यष्टौ निरीक्षयेत् । नाडीं मूत्रं मलं जिह्वां शब्द स्पर्श दृगाकृतिः । *Yogaratnākara 5*

Yogaratnākara described eight varieties of *rogi parīkṣā* namely *nāḍī, mūtra, mala, jihvā, śabda, sparśa* and *dṛk* for the diagnosis of diseases.

नाडी परीक्षा (Examination of Pulse)

Examination of the *nāḍī* is necessary to diagnose altered condition of *doṣās* like diminished functions or hyper functions or mixed or normal functions of *doṣās*. *Nāḍī parīkṣā* sheds light on entire condition of diseases.

Sites of Nāḍī Parīkṣā

नाडीमङ्गुष्ठमूलाधः स्पृशेद्दक्षिणगे करे ।
ज्ञानार्थं रोगिणो वैद्यो निजदक्षिणपाणिना ॥

Yogaratnākara 5

Physician has to examine the pulse of the patient in right hand by using his right hand.

करस्याङ्गुष्ठमूले या धमनी जीवसाक्षिणी ।
तच्चेष्टया सुखं दुःखं ज्ञेयं कायस्य पण्डितैः ॥

Śā.S.Pū 3/1

Pulse felt at the wrist region signifies the life of the patient and physician should be able to diagnose the disease and healthy condition by observing the nature of the pulse.

Use right hand for male patients and left hand for female patients because it is best felt in respective hands.

नाडी परीक्षा विधि (Process of Examination of Pulse)

Physician should be seated in comfortable position and in a healthy composed mood, then start examining the pulse of the patient in morning hour for one *prahara*. *Vaidya* must hold the patient elbow gently with the left hand and feel the pulse with his right index, middle and ring fingers kept in close apposition near wrist region.

वारत्रयं परीक्षेत धृत्वा धृत्वा विमोचयेत्।
विमृश्य बहुधा बुद्धया रोगव्यक्तिं विनिर्दिशेत्॥

Yogaratnākara 6

Examine the pulse thrice by pressing and releasing technique and diagnose the disease by using his intelligent power.

अङ्गुलित्रितये स्पृष्ट्वा क्रमाद्दोषत्रयोद्भवाम्।
मन्दां मध्यगति तीक्ष्णां त्रिभिर्दोषैस्तु लक्षयेत्॥

Yogaratnākara 6

Identify the *vāta, pitta* & *kapha* pulsations at the index, middle and ring fingers respectively and elicit its characters like feeble, moderate and fast. Along with identify the character of various *doṣic* pulse.

वातं पित्तं कफं द्वन्द्वम् त्रितयं सन्निपातिकम्।
साध्यासाध्य विवेकं च सर्वं नाडी प्रकाशयेत्॥

Yogaratnākara 6

Examination of pulse shed light on the involvement of *vāta* or *pitta* or *kapha* or mixing of two *doṣās* or amalgamation of three *doṣā* or curable disease or incurable disease.

नाडी पर्याय (Synonyms of Pulse)

स्नायुर्नाडी ततो हंसी धमनी धरणी धरा।
तन्तुकी जीवनज्ञाना शब्दाः पर्यायवाचकाः॥

Yogaratnākara 6

Synonyms of *nāḍi* are *snāyu, nāḍi, haṁsi, dhamanī, dharaṇī, dharā, tantukī, jīvanjñāna*.

Contra Indications for Nāḍī Parīkṣā

सद्यःस्नातस्य भुक्तस्य तथा स्नेहावगाहिनः।
क्षुत्तृषार्तस्य सुप्तस्य नाडी सम्यक् न बुध्यते॥

Yogaratnākara 6

Pulse should not be examined in following conditions.

- Just after taking bath.
- Just after taking food.
- After internal and external oleation therapy.
- During hunger
- During thirst
- During sleep or just after awakening.

Excellency in *nāḍī parīkṣā* may be attained by constant effort and practical experience by observing pulse of various healthy and diseased individuals. It is accepted that almighty god resides in *nāḍī* i.e. *Brahmā* resides in *vātanāḍī, Śankara* resides in *pitta nāḍī* and *Viṣṇu* resides in *kapha nāḍī*.

अग्रे वातवहा नाडी मध्य वहति पित्तला।
अन्ते श्लेष्मविकारेण नाडी ज्ञेया बुध सदाः॥

Yogaratnākara 7

Pulsation felt in index, middle and ring finger signifies *vāta, pitta* and *kapha nāḍi* respectively.

Physiological State of Pulse

सुखितस्य स्थिरा ज्ञेया तथा बलवती स्मृता।

Śā.S.Pū 3/8

Pulse of healthy individual is steady and forceful (with normal rate, rhythm, character and symmetry).

हसंगा चैव या नाडी तथैव गजगामिनी।
मुखं प्रशस्तं च भवेत्तस्याऽऽरोग्यं भवेत्सदा॥

Yogaratnākara 9

Waveform of the *nāḍī* resembles that of swan or elephant with freshness in face signifies the healthy pulse.

Pulse in Various Pathological States

Wave form of the *nāḍī* in various *doṣic* excacerbations.

Vāta Prakopa Nāḍī

नाडी धत्ते मरुत्कोपे जलौकासर्पयोर्गतिम्।

Śā.S.Pū 3/2

Waveform of the *vāta prakopa* resembles the movement like that of *jalauka* (leech) or *sarpa* (snake).

Pitta Prakopa Nāḍī

कुलिङ्गकाकमण्डूक गतिं पित्तस्य कोपतः।

Śā.S.Pū 3/2

Condition of waveform in agitated *pitta* resembles movement of *kuliṅga* (sparrow), *kākā* (crow) and *maṇḍūka* (frog).

Kapha Prakopa Nāḍī

हंसपारावत गतिं धत्ते श्लेष्म प्रकोपतः ॥
Śā.S.Pū 3/3

Waveform of *kapha prakopa nāḍī* resembles movements of *haṁsa* (swan) or *pārāvata* (pigeon).

राजहंस मयूराणां पारावत कपोतयोः ।
कुक्कुटस्य गतिं धत्ते धमनी कफसङ्गिनी ॥
Yogaratnākara 7

Waveform of *kapha prakopa nāḍi* is slow and resembles movements like that *rājahaṁsa* (swan), *mayūra* (peacock), *pārāvata* (pigeon), *kapota* (pigeon ivariety), *kukkuṭa* (hen).

Sannipātika Doṣa Prakopa Nāḍī

लावतित्तिरवर्तीनां गमनं सन्निपाततः ।
Śā.S.Pū 3/3

Waveform of *sannipātika prakopa nāḍi* resembles the movements like *lāva* (bustard quail), *tittira* (grey partridge) and *vārtī* (button quail).

Dvandva Doṣa Prakopa Nāḍī

कदाचिन्मन्दगमना कदाचिद्वेगवाहिनी ।
द्विदोष कोपतो ज्ञेया ॥
Śā.S.Pū 3/4

Waveform of *dvandva doṣa prakopa nāḍī* becomes sometimes slow and sometimes fast.

Pathological Conditions of Nāḍī in Various Diseases

ज्वर कोपेण धमनी सोष्णा वेगवती भवेत् ।
Śā.S.Pū 3/6

Pulse is rapid and hot in various fevers.

काम क्रोधाद्वेगवहा *Śā.S.Pū 3/6*

Pulse rate increases during *kāma* (lust) and *krodha* (anger)

क्षीणा चिन्ता भयप्लुता । *Śā.S.Pū 3/6*

Pulse rate decreases during *cintā* (worry), *bhaya* (fear)

मन्दाग्नेः क्षीणधातोश्च नाडी मन्दतरा भवेत् ।
Śā.S.Pū 3/7

Slow and feeble pulse felt in *mandāgni* (decreased digestion and metabolism) and *kṣiṇa dhātu* (decreased *dhātus*).

असृक्पूर्णा भवेत्कोष्णा । *Śā.S.Pū 3/7*

Warm pulse felt in case of vessels which are full of blood in excess.

गुर्वी सामा गरीयसी । *Śā.S.Pū 3/7*

During *sāma* state pulse will be heavy and tense.

लघ्वी वहती दीप्ताग्नेस्तथा वेगवति मता ।
Śā.S.Pū 3/8

During powerful digestive capacity pulse will be light and fast.

चपला क्षुधितस्य तृप्तस्य वहति स्थिरा ।
Śā.S.Pū 3/9

During hunger pulse become unsteady and flows steadily.

Pulse Indicating Poor Prognosis

हन्ति च स्थानविच्युता । स्थित्वा स्थित्वा चलति या सा स्मृता प्राणनाशिनी । अतिक्षीणा च शीता च जीवितं हन्त्यसंशयम् ।
Śā.S.Pū 3/8

Displacements of *nāḍī* from its own place and moves slowly and slowly this indicates patient's poor prognosis and patient will die. Feeble and cold pulsations definitely kill the patient.

कम्पते स्पन्दतेऽत्यन्तं पुनः स्पृशति चाङ्गुलीः ।
तामसाध्यां विजानीयान्नाडीं दूरेण वर्जयेत् ॥
Yogaratnākara 8

Pulse which has increased tremors with palpitations should be rejected for treatment. Normal pulse becomes fast suddenly signifies death of a person within fortnight.

Various characteristics of pulses described in *Śarangdhar saṁhitā* are given below in table form:

Different Conditions	Characteristics of the pulse	Ayurvedic terms	Simile of animals
1. Healthy pulse	Steady and strong.	Sthira and Balawati	-
2. Good hunger and appetite	Light to touch, tremulous and fast.	Laghwi, chapala and vegawati.	-
3. Satisfaction after hunger	Steady	Sthira	-
4. Lust and Rapid hunger	Rapid	*Vegavaha*	-
5. Anxiety and Feeble fear	Feeble	Kṣiṇa	-
6. Poor appetite Slow and cachexia	Slow	Mandatara	-
7. Intoxication	Heavy	Gurvi	-
8. Full of blood	Full, heavy and tepid to touch	-	-
9. *Vātika*	Curvilinear	Tiryakagati	Snake and leech
10. *Paittika*	Jumping	-	Sparrow, crow and frog.
11. *Kaphaja*	Slow	-	Swan,
12. When any two doshas are in combination (Dwandaja)	Alternately slow and fast.	-	-
13. Sannipatika	Speedy	-	Lark, quail and patridge.
14. Fever	Very hot and fast Slips	-	-
15. Death	from its normal position, slow and thready	-	

Various characteristics of pulses described in *Bhāvaprakaśa* are given below in table form :

Types of pulse	Characteristics of the pulse	Ayurvedic terms	Simile
1. In health	Steady and strong	Sthira and Balawati	-
2. Appetite	Tremulous	Chapal	-
3. Satisfaction after appetite	Steady	Sthira	-
4. Lust and anger	Fast	Vegavaha	-
5. Anxiety and fear	Feeble	Kshina	-
6. Vatika	Curvilinear motion	Vakragati	-
7. Paittika	Jumping	Utplutya	-
8. Kaphaja	Slow	Mandagati	-
9. Sanipatika	Speedy	Atidruta	-
10. Vata Paittika	Curvilinear and jumping	-	-
11. Vata kaphaja	Curvilinear and slow	-	-
12. Pitta Kaphaja	Jumping and slow	-	-

13. Fever	Very hot and fast	-	-
14. Poor appetite and cachexia	Slow	-	-
15. Death pulse	Slow, slips from its position extremely feeble and cold to touch	-	-

Mūtraparīkṣā *(Examination of Urine)*

Process of Collection of Urine

निशान्त्ययामे घटिकाचतुष्टये उत्थाप्य वैद्यः किल रोगिणं च । मूत्रं धृतं काचमये च पात्रे सूर्योदये तत्सततं परीक्षेत् ॥

Yogaratnākara 10

Awaken the patient in the early morning around 4 am and collect the urine in fresh glass jar and examine the urine after sunrise.

तस्याऽऽद्यधारां परिहृत्य मध्यधारोद्भवं तत्परि धारयित्वा सम्यक्परिज्ञाय गदस्य हेतुं कुर्याच्चिकित्सां सततं हिताय ।

Yogaratnākara 10

Don't collect first few drops of urine and collect only the middle stream and then examine the urine for better results.

***Doṣānusāra prakupita mūtra lakṣaṇa.* (Characters of urine vitiated by *doṣās*).** *Yogaratnākara 10*

वातप्रकोप मूत्र लक्षण (Urine vitiated by *vāta*)

वाते च पाण्डुरं (Urine becomes pale)

कफ प्रकोप मूत्र लक्षण (Urine vitiated by *kapha*)

मूत्रं सफेनं कफरोगिणः ।

Froathy urine indicates *kaphaja* vitiation in urine

पित्त प्रकोप मूत्र लक्षण (Urine vitiated by *pitta*)

रक्त वर्णं भवेत्पित्ते ।

Reddish colour of urine signifies *pitta* involvement.

द्वन्द्वज एवम् त्रिदोषज प्रकोप मूत्र लक्षण ।

Mixed features observed as per dominancy of *doṣās.*

सन्निपाते च कृष्णं स्यादेतन्मूत्रस्य लक्षणम् ।

Colour of the urine becomes black due to vitiation of three *doṣās.*

तैल बिन्दु परीक्षा (Taila Bindu Parīkṣā)

Put one drop of *tila taila* by the help of *tṛṇa* in collected urine, if urine spreads indicates good prognosis, doesn't spread signifies difficult prognosis and if it sinks it indicates incurable disease. *(Yogaratnākara)*

If *tila taila* drop spreads towards *pūrva* (east) indicates good prognosis and person become healthy quickly.

- If *tila taila* drop spreads towards *dakṣiṇa* (south), it indicates person is suffering from fever and patient becomes alright gradually.
- If *tila taila* drop spreads towards *uttara* (north) definitely patient is going to be free from disease.
- If *tila taila* drop spreads towards *paścima* (west) region, it signifies person become healthy and happier.
- If *tila taila* drops spreads towards *iśhāñya* (north east) region definitely patient is going to die within a month.
- If *tila taila* drop spreads towards *āgneya* (south east) and *nairutya* (south west) and spreaded drop becomes many pieces, it indicates death of the patient.
- If *tila taila* drop spreads towards *vāyavya* (north west) definitely patient is going to die, even if nectar was given to him.

Shapes

- If *tila taila* drop attains various shapes like cow, headless body, weapon size, tortoise, quadrangular, triangular don't treat such patients.
- If *tila taila* drop attains shapes like lotus, ponds, pigeon, elephant, house etc. then treat the patient.

- If *tila taila* drop attains shape like that of man or appearance of two brains signifies person is suffering from *bhūta doṣa.*

Dosic predominance

- If *tila taila* drop attains round shape it indicates *vāta doṣa* vitiation, pointed indicates *kapha doṣa* vitiation and bubbles indicates *pitta* vitiation and if it sinks indicates involvement of all the three *doṣās.*

मञ्जिष्ठाभं धूम्रवर्णं च नीलं स्निग्धं मूत्रं वारितुल्यं च शीतम् ।
ज्ञात्वा चित्ते बुद्धिमान्मानुषाणां कुर्यात्त्वन्तर्भेषजं रोगिणां च ।
(Yogaratnākara 12)

By observing various colour changes in urine like reddish, smoky, blue, sticky, watery, cold etc. one can diagnose the disease.

Characteristics of Urine in Various Disorders

Disease	**Nature of Urine**
उदक मेह *(Udaka meha)*	Transparent, abundant, white, cold, odorless and water like
इक्षु मेह *(Ikṣu meha)*	Sweet like sugarcane juices, little viscous, turbid and cold
सान्द्र मेह *(Sāndra meha)*	Dense deposition of precipitate in vessel
सान्द्र प्रसाद मेह *(Sāndra prasāda meha)*	Partly precipitates and partly clear
शुक्ल मेह *(Śukla meha)*	White urine like flour with frequent micturation
शुक्र मेह *(Śukra meha)*	Contains seminal fluid or looks like seminal fluid
शीत मेह *(Śīta meha)*	Frequent micturation with excessive sweet ness and cold
सिकता मेह *(Sikatā meha)*	Small particles appears in urine
शनै मेह *(Śanai meha)*	Passes urine with difficulty slowly and slowly in little quantity.
आलाल मेह *(Ālāla meha)*	Urine becomes like threads, frothy and saliva like
क्षार मेह *(Kṣāra meha)*	Smell, colour, taste and touch of urine like those of alkalies
काल मेह *(Kāla meha)*	Huge quantity of black urine
नील मेह *(Nīla meha)*	Urine becomes sour taste and colour appears like that of the feather of *cāsa* bird (blue jay)
रक्तमेह *(Rakta meha)*	Colour of urine is red with saline taste and smells like that of raw flesh.
मञ्जिष्ठा मेह *(Mañjiṣṭhā meha)*	Colour of urine is like that of the decoction of *mañjiṣṭhā* having fleshy smell
हरिद्र मेह *(Haridra meha)*	Colour of urine is like that of decoction of *haridra* having pungent taste
वसामेह *(Vasā meha)*	Frequently passes urine mixed with *vasā* or similar to it
मज्जा मेह *(Majjā meha)*	Frequent micturation mixed with majjā
हस्ति मेह *(Hasti meha)*	Large quantity of urine comes out constantly like an excited elephant.
मधु मेह *(Madhu meha)*	Colour of the urine becomes pale and ununctous having sweet and astringent taste
अच्छ मूत्र *(Accha mūtra)* Clear & Transparent	अश्मरी *(Aśmarī)* उदकमेह *(Udaka meha)*
अम्ल मूत्रता *(Amla mūtratā)* Acidic urine	अम्ल मेह *(Amla meha)* नील मेह *(Nīla meha)*
मूत्र बाधा *(Mūtra bādha)* or मूत्र सङ्ग *(Mūtra saṅga)* or	पुरीषज आनाह *(Pūriṣaja ānaha)* अन्तर्विद्रधि असाध्य लक्षण *(Antarvidradhi Asādhya lakṣaṇa)* अश्मरी असाध्य लक्षण *(Aśmarī asādhya lakṣaṇa)*

मूत्र अवरोध (*Mūtra avarodha*) Retention or Suppression of urine	वातज अष्ठीला (*Vātaja asṭhilā*) वातदुष्टिस्तन्यपानज बालरोग (*Vātaduṣṭistanyapānaja bālaroga*) गुदगत वात (*Gudagata vāta*) कफावृत समान (*Kaphāvṛta samāna*) कोष्ठाश्रित वात (*Koṣthāśrita vāta*) मूढगर्भ (*Mūḍhagarba*) मूत्रसङ्गलक्षण (*Mūtrasaṅga lakṣaṇa*) मूत्राघात रोग (*Mūtraghāta roga*) शर्करा मूत्रकृच्छ्र (*Śarkarā mūtrakṛcchra*) निरुद्ध प्रकश (*Niruddha prakaśa*) वातज परिणामशूल (*Vātaja pariṇāmaśūla*) प्रत्याष्ठीला (*Pratyāṣṭhīlā*) शर्करा असाध्य लक्षण (*Śarkarā asādhya lakṣaṇa*) महा श्वास (*Mahā śvāsa*) शुक्र निरोधज उदावर्त (*Śukra nirodhaja udāvarta*) वातज उदावर्त (*Vātaja udāvarta*) वातवस्ति (*Vāta vasti*) विसूचिका उपद्रव (*Visūcikā upadrava*)
मूत्रकृच्छ्र (*Mūtra kṛcchra*) Difficulty in micturition or dysuria	अश्मरि पूर्वरूप (*Aśmarī pūrvarupa*) कफज अर्श (*Kaphaja arśa*) गुल्म सामान्य लक्षण (*Gulma sāmānya lakṣaṇa*)
यक्ष्मा असाध्य लक्षण (*Yakṣmā asādhya lakṣaṇa*) Incurable symptoms of *Yakṣmā*	मूत्रकृच्छ्र रोग (*Mūtrakṛcchra roga*) मूत्रसाद (*Mūtrasāda*) पक्वाशयगत वात (*Pakvāśayagata vāta*)
शुक्राश्मरी (*Śukrāśmari*) Gravel due to *Śukra*	शर्करा (*Śarkarā*) मूत्र निरोधज उदावर्त (*Mūtra nirodhaja udāvarta*)
वृद्धि (*Vṛddhi*) Swelling / growth	उष्णवात (*Uṣṇa vāta*) बस्तिविद्रधि (*Basti vidradhi*) विड् विघात (*Vid vighāta*)
कृष्ण मूत्रता (*Kṛṣṇa mūtratā*) Blackish discolouration of urine	वातज अर्श (*Vātaja arśa*) कामला असाध्य लक्षण (*Kāmalā asādhya lakṣaṇa*) वातज पाण्डु (*Vātaja pāṇḍu*) वातज स्वरभेद (*Vātaja svarabheda*) काल मेह (*Kāla meha*)
लवण मूत्रता (*Lavaṇa mūtratā*) Salty urine	लवण मेह (*Lavaṇa meha*) लोहित मेह (*Lohita meha*) रक्तमेह (*Rakta meha*)
मूत्राल्पता (*Mūtrālpatā*) Oliguria	वातज अश्मरी (*Vātaja aśmarī*) मूत्रोत्सङ्ग (*Mūtrotsaṅga*) वातकुण्डलिका (*Vāta kuṇḍalikā*) वातज मूत्रकृच्छ्र (*Vātaja mūtrakṛcchra*) शनैर मेह (*Śanair meha*)
मधुर मूत्रता (*Madhura mūtratā*) Glycosuria / Sweetish urine	इक्षुवालिका मेह (*Ikṣuvālikā meha*) क्षौद्रमेह (*Kṣaudra meha*)

	मधुमेह (*Madhu meha*)
	शीतमेह (*Śīta meha*)
मुहुमुहु मूत्र प्रवृत्ति (*Muhu muhu mūtra pravṛtti*) Frequent micturition	वातज अश्मरी (*Vātaja aśmarī*)
	पित्तज मूत्रकृच्छ्र (*Pittaja mūtrakṛcchra*)
	वातज मूत्रकृच्छ्र (*Vātaja mūtrakṛcchra*)
	शनैर मेह (*Śanaira meha*)
पिच्छिल मूत्र (*Picchila mūtra*) Sticky/Slimy urine	लाला मेह (*Lālā meha*)
	उदक मेह (*Udaka meha*)
पीतमूत्रता (*Pīta mūtratā*) Yellowish urine	कामला असाध्य लक्षण (*Kāmalā asādhya lakṣaṇa*)
	पित्तज मूत्रकृच्छ्र (*Pittaja mūtrakṛcchra*)
	मूत्रसाद (*Mūtra sāda*)
	पित्तज पाण्डु (*Pittaja pāṇḍu*)
	पाण्डु पूर्वरूप (*Pāṇḍu pūrvarupa*)
	पित्तज प्रमेह (*Pittaja prameha*)
	पित्तज स्वरभेद (*Pittaja svarabheda*)
	उष्णवात (*Uṣṇa vāta*)
प्रभूत मूत्रता (*Prabhūta mūtratā*) Excessive urination / polyuria	प्रवृद्ध आमवात (*Pravṛddha āmavāta*)
	प्रमेह प्रत्यात्म लक्षण (*Prameha pratyātma lakṣaṇa*)
	शीतमेह (*Śita meha*)
	उदकमेह (*Udaka meha*)
सरूज मूत्रता (*Saruja mūtratā*) Painful micturition	अश्मरी (*Aśmarī*)
	पित्तज मूत्रकृच्छ्र (*Pittaja mūtrakṛcchra*)
	मूत्रक्षय (*Mūtrakṣaya*)
	मूत्रोत्सङ्ग (*Mūtrotṣaṅga*)
	वातकुण्डलिका (*Vāta kuṇḍalikā*)
शुक्ल मूत्रता (*Śukla mūtratā*) Whitish urine	मूत्रसाद (*Mūtra sāda*)
	कफज पाण्डु (*Kaphaja pāṇḍu*)
	पिष्टमेह (*Piṣṭa meha*)
	उदक मेह (*Udaka meha*)
विस्र मूत्रम (*Visra mūtram*) Smell like raw meat/Foul smell urine	मञ्जिष्ठामेह (*Mañjiṣṭhā meha*)
	रक्तमेह (*Rakta meha*)
रक्तपीतमूत्रता (*Raktapīta mūtratā*) Reddish urine	कामला (*Kāmalā*)
सरक्त मूत्रता (*Sarakta mūtratā*) Reddish urine	अश्मरि (*Aśmarī*)
	पित्तज मूत्रकृच्छ्र (*Pittaja mūtrakṛcchra*)
	मूत्रसाद (*Mūtra sāda*)
	मूत्रसङ्ग (*Mūtra saṅga*)
	पितावृत अपानवायु (*Pittāvṛta apānavāyu*)
	रक्तमेह (*Rakta meha*)
	अधोग रक्तपित्त (*Adhoga rakta pitta*)
	उष्णवात (*Uṣṇa vāta*)
शर्करा (*Śarkarā*) Urinary gravel	गुदगत वात (*Gudagata vāta*)
	शर्करा अश्मरि (*Sarkarā aśmarī*)

मल परीक्षा or पुरीष परीक्षा (Examination of Stool) (Properties of Doṣānusāra Mala Lakṣaṇa)

Aim

To perform the gross examination & physical examination of stool

Gross & physical examination by visual observation for following aspects

- *Mātrā* (quantity)
- *Varṇa* (Colour)
- *Gandha* (odor)
- *Sanghāta* (Consistency
- *Kapha* (Mucus)
- *Rakta* (Blood)
- *Jala-Majjan & Jala Plavana Puriṣa Parīkṣā*

The scattered references available in *Āyurvedic* texts pertaining to stool changes in different pathological states are mentioned below. The scattered references available in *Āyurvedic* texts are compiled below following the scheme of *Suśrutā's Saḍvidha Parīkṣā*. *Chakṣusendriya Parīkṣā*: In *Chakṣusendriya Parīkṣā*, one can assess colour, consistency, presence of froth, abnormal constituents etc. The *pitta doṣa* according to *Āyurveda* is responsible for the production of all colours. *Tridoṣā*s also play an important role in affecting the colour of stool as well as other parts of body. Vitiation of *Doṣās* causes changes in different colour. Some of the changes in colour which are the characteristic features of several diseases are given below

Quantityof Purīṣa

Purīṣa (faeces) - Seven *Añjali* C S Sha7/15 & *A.H.Śa* 3-80-81

Note- The fluid substances of body quantifiable in *Añjalī* (*Añjalī*-both hands joined together and the filled capacity in hand is approximately 160 ml-190ml because it measured through one's own hands joined together). The quantity expressed is overage as these increase or decrease, which is to be understood by inference & one own body hand measurement.

Clinical Significance

Stool findings in Āma Atisāra (Characteristic properties of stool in Āma Atisāra)

संसृष्टमेभिर्दोषैस्तु न्यस्तमप्स्ववसीदति। पुरीषं
भृशदुर्गन्धि विच्छिन्नं चामसंज्ञकम् ॥

S.S.Utt.40/17

इदानीमामातीसारस्य लक्षणमाहु-संसृष्टमेभिर्दोषैरित्यादि । संसृष्ठमेभिर्दोषैः पूर्वनिर्दिष्ठैर्वातादिलि-ङ्गैर्गुरुतरैर्व्याप्तमित्यर्थः। अवसीदति ब्रुडति । विच्छिन्नम् अल्पाल्पप्रवर्तकं; 'विच्छिन्नम्' इत्यत्र 'पिच्छिलम्' इति केचित् पठन्ति ॥

S.S.Utt. 40/17(Ḍalhaṇa)

The following characteristic properties of stool indicates improperly processed stool :

1. *Samsrusṭamebhirdoṣaistu nyastamapsvavasīdati*- Stool sinks down or settles down in water due to multiple combinations of doshas with stool
2. *Puriṣa durgandhi*- The foul odor of stool
3. *Vicchinnam*-frequent passing of stool in little quantity. Some people says it means excessive slimyness in stool

Stool findings in Vātaja Atisāra (characteristic properties of stool in Vātaja Atisāra)

विज्जलमामं विप्लुतमवसादि रुक्षं द्रवं सशूलमामगन्धमीषच्छब्दमशब्दं वा विबद्धमूत्रवातमतिसार्यते पुरीषं, वायुश्चान्तःकोष्ठे सशब्दशूलस्तिर्यक् चरति विबद्ध इत्यामातिसारो वातात् । पक्वं वा विबद्धमल्पाल्पं सशब्दं सशूलफेनपिच्छापरिकर्तिकं हृष्टरोमा विनिःश्वसञ् शुष्कमुखः कट्यूरुत्रिकजानुपृष्ठपार्श्वशूली भ्रष्टगुदो मुहुर्मुहुर्विग्रथितमुपवेश्यते पुरीषं वातात्; तमाहुरनुग्रथितमित्येके, वातनुग्रथितवर्चस्त्वात् ॥ *C.S.Ci 19/5*

तस्य रूपाणीत्यादिना आमवातातीसारलक्षणमाह। अममिति आमानुगतम् । विप्लुतमिति प्रसरणशीलम् । अवसादीति भूमौ पतितं लीनं भवति । पक्वं वेत्यादिना पक्वातातिसारमाह। विनिःश्वसिन्निति शब्दं कुर्वन् । तमाहुरनुग्रथितमिति विग्रथितपुरीषातिसारावस्थां प्राप्तं वातातिसारम् । वातग्रथितवर्चस्त्वादित्यनेन यत्र पक्वातातिसारेऽपि वातानुग्रथितवर्चस्त्वं न भवति नासावनुग्रथितसञ्ज्ञ इति दर्शयति ॥ *C.S.Ci 19/5 (Chakrapāṇī)*

The following characteristic properties of stool indicates *Āmaja Vātātisāra* :

1. *Vijjala Āma or Picchila*- Passage of slimy stool associated with mucus (Ama)

2. *Vipluta*- The stool is watery and spreads easily
3. *Avasāda*- it means stool either sinks in water or settles down in water
4. *Rukṣam Dravam*- Consistency of the stool is either watery or dry or hard stools
5. *Sa Śūla* - Evacuation of stool is accompanied with colic pain
6. *Āmagandha* - The putrid odor of stool
7. *Śabda Aśabda* - Evacuation of stool is associated with little or no sound
8. *Vibaddha Mūtra Vāta Atisāra*- Evacuation of the stool is not accompanied with flatus and urine
9. *Koṣṭha Saśabdha Śūla*- The aggravated *Vāta* (flatus) moves inside the *Koṣṭha* (gastrointestinal tract) obliquely along with gurgling sound associated with colic pain.

The following characteristic properties of stool indicates *Pakvaja Vātātisāra*

1. *Vibaddham*-Constipation
2. *Alpālpa Sa Śabda Sa Śūla*- The evacuation of little stool associated with sound and colic pain.
3. *Phena* – frothy stool
4. *Piccha*- stool with mucous
5. *Parikartika* – Severe acute pain

   The patient suffers from griping pain, horripilation, murmuring, dryness of the mouth.
6. *Hṛṣta Roma*-Goosebumps
7. *Viniśvasan*-Difficulty in breathing
8. *Śuṣka Mukha*-dryness in mouth
9. *Kaṭi Uru Trika Jānu Pṛṣṭa Pārśva Śūla*-Pain in the lumbar region, thighs, sacral region, knees, back and sides of the chest
10. *Bhṛṣṭa Guda* -prolapsed rectum
11. *Muhurmuha vigrathitamupaveśyate puriṣam*- frequent evacuation of hard stool
12. *Tamāhuranugrathitamityake vātānugrathitavarcastvāt*- some scholars termed this as *Anugrathita Atisāra* due to evacuation the hard stool.

Stool findings in *Pittaja Atisāra* (characteristic properties of stool in *Pittaja Atisāra*)

तत् प्रकुपितं द्रवत्वादूष्माणमुपहत्य पुरीषाशयविसृतमौष्ण्याद्
द्रवत्वात् सरत्वाच्च भित्त्वा पुरीषमतिसाराय प्रकल्पते। तस्य रुपाणि-
हारिद्रं हरितं नीलं कृष्णं रक्तपित्तोपहितमतिदुर्गन्धमतिसार्यते पुरीषं,
तृष्णादाहस्वेदमूर्च्छाशूलब्रध्नसंतापपाकपरीत इति पित्तातिसारः ॥

C.S.Ci. 19/6

पित्तलस्येत्यादिना पित्तातिसारमाहू। द्रवत्वादूष्माणमुपहत्येति
यद्यपि पित्तमुष्णमग्नेः समानतया वर्धकं भवतीति युज्यते, तथाऽपि
द्रवत्वादूष्माणमग्निरूपं हन्तीत्यर्थः । पुरीषाशयविसृतमिति
पुरीषाशयगतं पित्तम्। ब्रध्नः गुदः।

C.S.Ci. 19/6 (Cakrapāṇi)

The following characteristic properties of stool indicates *Pittaja Atisāra* : Due to the consumption of *Pitta* aggravating etiological factors leading to the provocation of liquid characteristic properties of *Pitta* as a result it suppresses the power of *Agni* (digestion) and further reaches the colon & disintegrates the stool because of its heat, liquidity and mobility leading to the manifestation of *Pittaja Atisāra*.

The signs and symptoms of *Pittaja Atisāra* are as follows :

- *Hāridrā Harita Nīla Kṛṣṇa* – patient passes frequent stool which is yellow, green, blue or black in color.
- *Rakta Pitta Upahita*- patient passes stool mixed with pitta (Bile) and Rakta (blood)
- *Atidurgandha*- Excessive bad odor
- *Tṛṣṇā*- thirst
- *Dāha*- burning sensation
- *Sveda*- excessive sweating
- *Mūrcchā* -fainting
- *Śūla*-colic pain
- *Bradhna Santāpa*-Burning sensation in the anal region.
- *Gudapāka*- There is inflammation of in the Anal region

Stool findings in Kaphaja Atisāra (characteristic properties of stool in Kaphaja Atisāra)

श्लेष्मलस्य तु गुरुमधुरशीतस्निग्धोपसेविनः संपूरकस्या-
चिन्तयतो दिवास्वप्नपरस्यालसस्य श्लेष्मा प्रकोपमापद्यते । स

स्वभावाद् गुरुमधुरशीतस्निग्धः स्रस्तोऽग्निमुपहत्य सौम्यस्वभावात् पुरीषाशयमुपहत्योपक्लेद्य पुरीषमतिसाराय कल्पते। तस्य रुपाणि स्निग्धं श्वेतं पिच्छिलं तन्तुमदामं गुरु दुर्गन्धं श्लेष्मोपहितमनुबद्धशूलमल्पाल्पमभीक्ष्णमतिसार्यते सप्रवाहिकं, गुरुदरगुदबस्तिवंक्षणदेशः कृतेऽप्यकृतसंज्ञसलोमहर्षः सोत्क्लेशो निद्रालस्यपरीतः सदनोऽन्नद्वेषी चेति श्लेष्मातिसारः ॥

C.S.Ci. 19/7

The following characteristic properties of stool indicates *Kaphaja Atisāra.* Due to the consumption of *Kapha* aggravating etiological factors leading to the provocation of *Kapha Doṣa* and *Kapha* moves downwards by its heavy, sweet, cold and unctuous nature and weakens the *Agni* (bio digestive power) on account of its natural cooling properties & further it reaches the colon & liquefies the stool to cause *Kaphaja Atisāra*.

Kaphaja Atisāra Lakṣaṇa (Signs and symptoms of Kaphaja Atisāra)

Snigdha Śveta Picchila Tantu Āma Guru- patient passes frequent watery stool which is unctuous, white, slimy, thready, undigested & bulky stool (heavy stool)

Durgandha -Foul smelling

Śleṣma Upahita- patient passes stool mixed with kapha(mucous)

Anubaddha Śūla-suffers from continuous pain

Alpālpamabhikṣṇamatisāryate sapravāhikam- Evacuates watery stool frequently in small quantities associated with fecal incontinence

Guru Udara- The patient suffers from heaviness in the abdomen

Guda Basti Vankṣaṇa Śūla- The patient suffers from pain in the anal region, urinary bladder and in the pelvic region.

Kṛteapyakṛta Samjñaḥ- Feels the urge for passing stools even after evacuation

Loma Harṣa -horripilation

Utkleśa -nausea

Nidrā-excessive sleep

Ālasya- idleness/ laziness

Sadana- prostration

Annadveṣi -dislike towards food intake

Stool findings in Sannipātaja Atisāra (characteristic properties of stool in Sannipataja Atisara)

तत्र शोणितादिषु धातुष्वतिप्रदुष्टेषु हारिद्रहरितनीलमाञ्जिष्ठमांसधावनसन्निकाशं रक्तं कृष्णं श्वेतं वराहमेदःसदृशमनुबद्धवेदनमवेदनं वा समासव्यत्यादुपवेश्यते शकृद् ग्रथितमामं सकृत्, सकृदपि पक्वमनतिक्षीणमांसशोणितबलो मन्दाग्निर्विहतमुखरसश्च, तादृशमातुरं कृच्छ्रसाध्यं विद्यात्। *C.S.Ci 19/9*

The following characteristic properties of stool indicates Sannipātaja Atisāra :

- Simultaneous aggravation of three *Doṣa* cause extreme vitiation of *Śoṇitadi Dhātus* resulting in the manifestation of altered colours in the stool.
- The nature of these colours depends upon the proportionate involvement of the vitiated *Dhātu* and *Doṣa*.

Marked abnormality in the raktadi dhatus along with three dosha vitiation causing the following abnormalities in the stool along with other signs and symptoms

Hāridra Harita Nīla Mañjiṣṭha Māmsa Dhāvanasannikāśam Raktam Kṛṣṇam Śvetam Varāha Meda Sadṛśa- Patient passes frequent stool which is yellow, green, bluish, having the colour of Indian madder, fiery red colour similar to water obtained after meat wash, reddish, blackish, whitish, pinkish colour resemble like pig.

Manubaddhavedanamavedanam va- The patient experience continuous pain or free from pain in the abdomen.

Samāsavyatyādupaveśyate- The above mentioned signs and symptoms may be manifested completely or few of them.

Śakṛt Grathitamāmam Sakṛta Sakṛdapi pakva- patient passes stool which resemble like pellet contains undigested food particles and sometimes the stool is free from undigested food particles.

Anati Kṣīṇa Māmsa Śoṇita Bala- excessive depletion of the muscle tissue, blood and strength

Mandāgni-diminished function of agni

Vihat Mukha rasa-distaste in the oral cavity

Such association of feature indicates as *Kṛcchra Sādhya* (difficult to cure).

Asāddhya Lakṣaṇa in Sannipātaja Atisāra

एभिर्वर्णैरतिसार्यमाणं सोपद्रवमातुरमसाध्योऽयमिति प्रत्याचक्षीत, तद्यथा पक्वशोणिताभं यकृतखण्डोपमं मेदोमांसोदकसन्निकाशं दधिघृतमज्जतैलवसाक्षीरवेसवाराभमतिनीलमतिरक्तमतिकृष्णमुदकमिवाच्छं पुनर्मेचकाभमतिस्निग्धं हरितनीलकषायवर्णं कर्बुरमाविलं पिच्छिलं तन्तुमदामं चन्द्रकोपगतमतिकुणपपूतिपूयगन्ध्यामाममत्स्यगन्धि मक्षिकाक्रान्तं कुथितबहुधातुस्त्रावमल्पपुरीषमपुरीषं वाऽतिसार्यमाणं तृष्णादाहज्वरभ्रमतमकहिक्काश्वासानुबन्धमतिवेदनमवेदनं वा स्त्रस्तपक्वगुदं पतितगुदवलिं मुक्तनालमतिक्षीणबलमांसशोणितं सर्वपर्वास्थिशूलिनमरोचकारतिप्रलापसंमोहपरीतं सहसोपरतविकारमतिसारिणमचिकित्स्यं विद्यात्, इति सन्निपातातिसारः ॥

C S Chi 19/9

The diarrhea is associated with following complications are considered as *Asāddhya* (incurable).

Sa Upadrava - Associated with complication.

Pakva Śoṇitābha Yakṛta Khanḍopamam- Patient passes stool which is dark blood & appears like piece of liver

Medomāmsa Udaka Sannikāśa- Patient passes stool resembles like washing of fat or flesh

Dadhi Ghṛta Majjā Taila Vasā Kṣīra Vesavāra- Patient passes stool resembles like curd, ghee, marrow, oil, fat, milk & minced meat

Ati Nīla Varṇa- dark blue

Atirakta Varṇa- dark red

Atikṛṣṇa Varṇa- dark black

Udakamivāccha mecakābha- clear resembles like water & slimy blackis (मेचकाभिमति स्निग्धकृष्णम्)

Atisnigdha –Excessive sliminess

Harita Varṇa- green colour stool

Nīla Varṇa- blue colour stool

Kaṣāya Varṇa-saffron colour stool

Karbura āvila – yellow colour turbidity

Picchila – Excessive mucous

Tantudamam-thread like associated with undigested particles

Candrakopagata ātikuṇapa pūti-pūya varca – stool resemble the moon-stone associated with pus & putrid odor (like dead body)

Āmagandhi - stool resemble the undigested food particles with foul smell

Matsyagandhi-odor resemble like raw fish

Alpa Puriṣa Apuriṣa - The stool contains less or no fecal matter

Makṣikākrāntam-accumulation of excess flies in stool

Kuthita bahu dhātu srāva- Patient passes excess foul smell stool containing slough and tissue elements

Alpa purīṣam-passes little stool

Apuriṣam-does not pass stool at all

Tṛṣṇā - thirst

Dāha - burning sensation

Jvara - fever

Bhrama - giddiness

Tama - fainting

Hikkā - hiccup

Śvāsa - dyspnea

Ativedana Avedana - excessive pain or no pain

Srasta pakvaguda Patita gudavalim Muktanāla- various degree of rectal prolapse associated with denaturation of the tissues in anorectal region

Atikṣīṇa bala māmsa śoṇita-excessive depletion of strength, muscle and blood

Sarvaparva asthi śūla - pain in all the joints and bones

Arocaka - distaste

Arati - restlessness

Atipralāpa - excessive delirium

Sammohaparitam - unconsciousness

Sahasoparata vikāra - always suffering from illness

Atisārāṇām acikitsyam-it is incurable

Raktaja Arśa associated with Vāta

विट् श्यावं कठिनं रूक्षं ॥ *C.S.Ci 14/171*

The following characteristic properties of stool indicates *Raktaja Arśa* associated with *Vāta*.

Stool becomes *Śyava* (grey), *Kaṭhina* (hard) and *Rūkṣa* (dry)

Raktaja Arśa associated with Kapha

शिथिलं श्वेतपीतं च विद् ॥ *C.S.Ci 14/173*

The following characteristic properties of stool indicates *Raktaja Arśa* associated with *Kapha*

Stool becomes *Śithila* (soft), *Śveta* (white) & *Pīta* (yellow colour)

Koṣṭhāśṛta Kāmalā

रक्तपीतशकृन्मूत्रो । *C.S.Ci 16/35*

The following characteristic properties of stool indicates *Koṣṭhāśṛta Kāmalā*.

Stool becomes reddish yellow discolouration in *Koṣṭhāśṛta Kāmalā* patients.

Śākhāśṛta Kāmalā

तिलपिष्टनिभं यस्तु वर्चः सृजति कामली ॥ *C.S.Ci. 16/124*

The following characteristic properties of stool indicates *Śākhāśṛta Kāmalā*.

The colour of stool resembling the tila *Piṣṭanibham* (sesame paste). i.e. clay coloured indicates the obstruction in the passage of Pitta by the *Kapha* observed in *Śākhāśṛta Kāmalā* (obstruction to the flow of bile to intestine).

Puriṣa Parīkṣā in Grahani Roga/Gada Vātaja Grahaṇī Roga manifest following chages in stool

चिराद्दुःखं द्रवं शुष्कं तन्वामं शब्दफेनवत् । पुनः पुनः सृजेद्वर्चः । (*C.S.Ci. 15/64*)

Patient passes stool frequently with difficulty, which is liquid mixed with hard stool, thin *Āma* associated with sound & froathyness.

Pittaja Grahaṇī Roga manifest following chages in stool

सोऽजीर्णं नीलपीताभं पीताभः सार्यते द्रवम् । (*C.S.Ci. 15/66*)

Patient passes stool, which is watery, undigested, either bluish-yellow or yellow in colour.

Kaphaja Grahaṇī Roga manifest following chages in stool

भिन्नामश्लेष्मसंसृष्टगुरुवर्चःप्रवर्तनम् । (C.S.Ci. 15/70)

Patient passes stool which is split into pieces, mixed with *Āma* & *Mucus* and heavy.

Sangrahagrahani manifest following chages in stool

द्रवं शीतं घनं स्निग्धं । (*M. Ni. 4*)

Patient passes stool which is liquid, cold, solid, unctuous.

Jala-Majjana & Jala Plavana Puriṣa Parīkṣā

मज्जत्यामा गुरुत्वाद्विट् पक्वा तूत्प्लवते जले ।
विनाऽतिद्रवसङ्घातशैत्यश्लेष्मप्रदूषणात् ॥
परीक्ष्यैवं पुरा सामं निरामं चामदोषिणम् ।
विधिनोपाचरेत् सम्यक् पाचनेनेतरेण वा ॥
(*C.S.Ci. 15/94-95*)

Jala-Majjana Puriṣa Parīkṣā : *Sāma Mala* or *Apakva mala* (stool) sinks into water due to *Gurutva* (bulky & semiformed stool) of *Viṭ* (Mala).

Jala Plavana Puriṣa Parīkṣā : *Pakva* or *Nirāma Mala* (Formed stool) floats over the water, provided the stool consistency is *Na Ati Drava Sanghāta* (neither watery or nor loose stool) and if it is not vitiated by *Śita Guṇa* (cold properties) and Kapha dosha.

According to Aṣṭāñga Hṛdaya for stool examination

अतीसारः समासेन द्विधा-सामो निरामकः ॥
सासृङ्निरस्त्रः तत्राद्ये गौरवादप्सु मज्जति ।
शकृद्दुर्गन्धमाटोपविष्टम्भातिप्रसेकिनः ॥
विपरीतो निरामस्तु कफात्पक्वोऽपि मथ्ज्जति ।
A.H.Ni. 8/13-15

- Two varieties of *Atisāra* (diarrhoea) one associated with *Āma* (*sāma*) and another not associated with *Āma* (*nirāma*).
- Another two varieties of *Atisāra* (diarrhoea) one associated with *Sāsra* (blood) and another not associated with *Nirāsra* (blood).

One associated with *Sāma/Apakva Puriṣa*

- The faeces are heavy and sink in water, have foul smell along with intestinal gurgling, stasis of undigested food in the stomach, pain in the stomach and excessive salivation.
- Faeces contain excessive *Kapha* and sinks though it is ripe in the case of *Sāma*.

One associated with Nirāma/Pakva Puriṣa

Which is not having ama (nirama) has opposite features

Summary of Puriṣa parikṣā versus stool examination in various abnormal conditions

S.No.	Puriṣa	Stool
Quantity	*Puriṣa* (faeces) - Seven *Añjali*	Normally there is 100 to 200 G/day.With a vegetable diet, may be 250 g/day.
Colour	*Hāridra Harita Nīla Kṛṣṇa* – patient stool which is yellow, green, blue passes frequent or black in color. *Rakta, Pitta Upahita*- patient passes stool mixed with *Pitta* (Bile) and *Rakta* (blood) *Śveta*- patient passes stool which is, *Hāridra, Harita, Nīla, Mañjiṣṭhā, Māmsa* Dha-*vanasannikāśam Raktam Kṛṣṇam Śvetam Varaha Meda Sadṛṣa*- Patient passes frequent stool which is yellow, green, bluish, having the colour of Indian madder, fiery red colour similar to water obtained after meat wash, reddish, blackish, whitish, pinkish colour resemble like pig; Ati *Nīla Varṇa*- dark blue; *Atirakta Varṇa-dark* red; *Atikṛṣṇa Varṇa*- dark black *Udakamivāccha mecakābha*- clear resembles like water & slimy blackish; *Kaṣaya Varṇa*-saffron colour stool; *Karbura āvila* - yellow colour turbidity; *Śyāva* (grey) *tila Piṣṭa-nibham* (sesame paste) i.e. clay colour; *Pakva Śoṇitābha Yakṛta Khanḍopamam*- Patient passes stool which is dark blood & appears like piece of liver Stool becomes reddish yellow discolouration	Black Bright red Fresh blood, mucus Clay coloured White Brown, Dark brown, or Yellow-brown, Gray color Green color Black (Tarry black) Brown Red color, Green or yellow-green Red streaks of blood on faeces
Consistency	*Vijjala Āma* or *Picchila*- Passage of slimy stool associated with mucus (Ama), Vipluta- The stool is watery and spreads easily, *Avasāda*-it means stool either sinks in water or settles down in water, *Rukṣama Dravam*- Consistency of the stool is either watery or dry or hard stools, *Phena*-frothy stool, *Piccha- stool* with mucous, *Snigdha Picchila Tantu Āma Guru*- patient passes frequent watery stool which is unctuous, slimy, thready, undigested & bulky stool (heavy stool), *Śleṣma Upahita*- patient passes stool mixed with kapha (mucous),	Pale, Bulky, frothy, Hard, flattened & Ribbon like semisolid, Watery, Rice water stools (copius thin with white flakes), Soft, Formed, Semiformed, Loose, Diarrheal, Watery like a fluid The mucosa of the colon produces mucus in response to parasympathetic stimulation. Pure mucous is translucent, gelatinous material clinging to the surface of the stool. Mucus in diarrhea with microscopically present with RBCs and WBCs Mucus with blood an excessive

	Medomāmsa Udaka Sannikāśa- Patient passes stool resembles like washing of fat or flesh, *Dadhī Ghṛta Majjā Taila Vasā Kṣīra Vesavāra*- Patient passes stool resembles like curd, ghee, marrow, oil, fat, milk & minced meat, *Candrakopagata atikuṇapa pūtī pūya* – stool resemble the moon-stone associated with pus & putrid odor (like dead body), *Muhurmuha vigrathitamupaveśyate puriṣam*-frequent evacuation of hard stool, *Ṣakṛd Grathitamāmam Śakṛta Śakrudapi pakva* - some time patient passes stool which resemble like pellet contains undigested food particles and sometimes the stool is free from undigested food particles.	amount of mucus
Odour	*Puriṣa durgandhi* - The foul odor of stool, *Āmagandha* - The putrid odor of stool, *Atidurgandha* - Excessive bad odor, *Āmagandhi* - stool resemble the undigested food particles with foul smell, *Matsyagandhi-odor* resemble like raw fish, *Kuthita bahu dhātu srāva*; Patient passes excess foul smell stool containing slough and tissue elements	The foul odor is caused by the undigested protein and by excessive intake of carbohydrates. Stool odor is caused by indole and skatole, which are formed by bacterial fermentation and putrefaction. A bad odor is sickly produced by undigested lactose and fatty acids. The odor is increased due to excess intake of proteins. The putrid odor is due to severe diarrhea of malignancy or gangrenous dysentery.

Clinical Significance of Purīśa Parīkṣā

Properties of mala vitiated by vāta

1 Dry, hard, blackish

- Dry, hard, blackish discolouration of stools.

पित्त प्रकोप दोषमल (Properties of *mala* vitiated by *pitta*)

- Yellowish discolouration of stools.

कफ प्रकोप दोषमल (Properties of *mala* vitiated by *kapha*)

- White coloured Stools.

त्रिदोष प्रकोप मल (Properties of *mala* vitiated by 3 *doṣās*)

- Black, loose, yellowish, constipated, whitish coloured stools.
- Foul smell with coldness indicates *jīrṇa mala*.

Properties of *mala* indicating poor prognosis

- Stool passed by a person which is too black, too white, too yellow and too red definitely kill the patient and patient dies quickly if associated with excessive hotness.

उष्ण पुरीष *(Uṣṇa puriṣa)* Warm stool	पित्तज अर्श *(Pittaja arśa)*
आम पुरीष *(Āma purīṣa)* Inadequately processed stool	वातज अतिसार *(Vātaja atisāra)* वातज ग्रहणी *(Vātaja grahaṇī)* संग्रहणी *(Saṁgrahaṇī)*
अरुण पुरीष *(Aruṇa puriṣa)*	अतिसार असाध्य लक्षण *(Atisāra asādhya lakṣaṇa)*

Reddish brown stool	संग्रहाणि (*Saṁgrahaṇī*) वातज अतिसार (*Vātaja atisāra*)
बद्ध पुरीष (*Baddha purīṣa*) Constipation	अजीर्ण लक्षण (*Ajīrṇa lakṣaṇa*) विष्टब्धाजीर्ण (*Viṣṭabdhājīrṇa*) अलसक (*Alasaka*) प्रवृद्ध आमवात (*Pravṛddha āmavāta*) पुरीषज आनाह (*Puriṣaja ānāha*) अर्श पुर्वरूप (*Arśa pūrvarupa*) वातज अर्श (*Vātaja arśa*) वातज अष्ठीला (*Vātaja aṣṭhīlā*) अतिसार पूर्वरूप (*Atisāra pūrvarupa*) वातदुष्टस्तन्यपानज बालरोग (*Vātaduṣṭa stanya pānaja bālaroga*) गुदगत वात (*Gudagata vāta*) गुल्म रोग (*Gulma roga*) अन्तर्वेग ज्वर (*Antarvega jvara*) सन्निपातज ज्वर (*Sannipātaja jvara*) वातज ज्वर (*Vātaja jvara*) कफावृत समान (*Kaphāvṛta samāna*) कोष्ठाश्रित वात (*Koṣṭhāśrita vāta*) कोष्ठ व्रण (*Koṣṭha Vraṇa*) पुरीषज क्रिमि (*Puriṣaja krimi*) पाण्डु असाध्य लक्षण (*Pāṇḍu asādhya lakṣaṇa*) परमद (*Paramada*) वातज परिणामशूल (*Vātaja pariṇāmaśūla*) वातज प्रमेह उपद्रव (*Vātaja prameha upadrava*) प्रत्याष्ठीला (*Pratyāṣṭhīlā*) सन्निरुद्धगुद (*Sanniruddha guda*) कफज शूल (*Kaphaja śūla*) वातज शूल (*Vātaja śūla*) महाश्वास (*Mahā śvāsa*) बद्धगुदोदर (*Baddha gudodara*) उदररोग लक्षण (*Udararoga lakṣaṇa*) पुरीषज उदावर्त (*Puriṣaja udāvarta*) वातज उदावर्त (*Vātaja udāvarta*) कोष्ठगत वात (*Koṣṭhagata vāta*) पक्वाशयगत वात (*Pakvaśayagata vāta*) वातव्याधि उपद्रव (*Vātavyādhi upadrava*) विष्टब्धाजीर्ण (*Viṣṭabdhājīrṇa*)
बहु पुरीष (*Bahu puriṣa*) Copious stool	अतिसार (*Atisāra*) अतिसार असाध्य लक्षण (*Atisāra asādhya lakṣaṇa*) संग्रहणी (*Saṁgrahaṇī*) अतिसार (*Atisāra*)
द्रव पुरीष (*Drava puriṣa*) Watery stool	पित्तज अर्श (*Pittaja arśa*) वातज ग्रहणी (*Vātaja grahaṇī*) पित्तज ग्रहणी (*Pittaja grahaṇī*) संग्रहणी (*Saṁgrahaṇī*)
घन पुरीष (*Ghana puriṣa*) Solid stool	संग्रहणी (*Saṁgrahaṇī*)
ग्रथित पुरीष (*Grathita puriṣa*) Thick & hard stool	वातज अर्श (*Vātaja arśa*)
हरित पुरीष (*Harita puriṣa*) Greenish stool	हलीमक (*Halimaka*)
कृष्ण पुरीष (*Kṛṣṇa puriṣa*) Blackish stool	कामला असाध्य लक्षण (*Kām-alā asādhya lakṣaṇa*)
कृष्णपीत पुरीष (*Kṛṣṇapita puriṣa*) Black-yellowish stool	वातज अर्श (*Vātaja arśa*) वातज स्वर भेद (*Vātaja svarabheda*)
लोहित पुरीष (*Lohita puriṣa*) Reddish stool	पित्तज अतिसार (*Pittaja atisāra*)
निल पुरीष (*Nīla puriṣa*) Bluish stool	अतिसार असाध्य लक्षण (*Atisāra asādhya lakṣaṇa*) पित्तज अतिसार (*Pittaja atisāra*) पित्तज अर्श (*Pittaja arśa*) पित्तज ग्रहणी दोष (*Pittaja grahaṇī doṣa*)
फेनिल पुरीष (*Phenila puriṣa*) Froathy stool	वातज अर्श (*Vātaja arśa*) वातज अतिसार (*Vātaja atisāra*) वातज ग्रहणी दोष (*Vātaja grahaṇī doṣa*)
पिच्छिल पुरीष (*Picchila puriṣa*) Slimy/sticky stool	कफज अर्श (*Kaphaja arśa*) संग्रहणी (*Saṁgrahaṇī*)
पीत पुरीषता (*Pīta puriṣatā*) Yellowish stool	पित्तज अर्श (*Pittaja arśa*) पित्तज अतिसार (*Pittaja atisāra*) पित्तज ग्रहणी दोष (*Pittaja grahaṇī doṣa*)

	हलीमक *(Halimaka)* पित्तज ज्वर *(Pittaja jvara)* कामला असाध्य लक्षण *(Kāmalā asādhya lakṣaṇa)* कामला *(Kāmalā)* पित्तज मूर्च्छा *(Pittaja mūrcchā)* पित्तज पाण्डु *(Pittaja pāṇḍu)* पाण्डु पूर्वरूप *(Pāṇḍu pūrvarupa)* पित्तज स्वरभेद *(Pittaja svarabheda)*
रक्तपीत पुरीष *(Rakta pīta puriṣa)* Reddish-yellowish stool	कामला *(Kāmalā)*
सकफ पुरीष *(Sakapha puriṣa)* Stool with mucus	मृद्भक्षणजन्य पाण्डु *(Mṛdbhakṣaṇajanya pāṇḍu)* पाण्डु असाध्य लक्षण *(Pāṇḍu asādhya lakṣaṇa)*
सान्द्र पुरीष *(Sāndra puriṣa)* Unctous stool	कफज अतिसार *(Kaphaja atisāra)*
सशब्द पुरीष *(Saśabda puriṣa)* Evacuation of stool with sound	वातज अतिसार *(Vātaja atisāra)* वातज ग्रहणी दोष *(Vātaja grahaṇī doṣa)* संग्रहणी *(Saṁgrahaṇī)*
सासृक् पुरीष *(Sāsṛk puriṣa)* Stool with blood	पित्तज अर्श *(Pittaja arśa)* कामला असाध्य लक्षण *(Kāmalā asādhya lakṣaṇa)* मृद्भक्षण जन्य पाण्डु *(Mridbhakṣaṇajanya pāṇḍu)*
शीत पुरीष *(Śīta puriṣa)* Coldish stool excretion	कफज अतिसार *(Kaphaja atisāra)* संग्रहणी *(Saṁgrahaṇī)*
श्लेष्मयुक्त पुरीष *(Śleṣmayukta puriṣa)* Stool mixed with mucus	कफज अर्श *(Kaphaja arśa)* कफज अतिसार *(Kaphaja atisāra)*
स्निग्ध पुरीष *(Snigdha purīṣa)* Sticky/greasy stool	अतिसार असाध्य लक्षण *(Atīsāra asādhya lakṣaṇa)* कफज अर्श *(Kaphaja arśa)* कफज अतिसार *(Kaphaja atisāra)*
स्निग्ध पुरीष *(Snigdha purīṣa)* Sticky/greasy/fatty stool	अतिसार असाध्य लक्षण *(Atīsāra asādhya lakṣaṇa)* कफज अतिसार *(Kaphaja atisāra)* सन्निपातज ग्रहणी दोष *(Sannipātaja grahaṇī doṣa)* संग्रहणी *(Saṃgrahaṇī)*
स्तोक पुरीष *(Stoka puriṣa)* Little scanty stool	वातज अर्श *(Vātaja arśa)*
शुक्ल पुरीष *(Śukla puriṣa)* Whitish stool	कफज अतिसार *(Kaphaja atisāra)*
शुष्क पुरीष *(Śuṣka puriṣa)* Dry/hard stool	उदावर्त *(Udāvarta)* वातज ग्रहणी दोष *(Vātaja grahaṇīdoṣa)*
श्याव पुरीष *(Śyāva puriṣa)* Brownish stool	हलीमक *(Halimaka)*

शब्द परीक्षा (Examination by Hearing)

गुरुस्वरे भवेश्लेष्मा स्फुटवक्ता च पित्तलः ।
उभाभ्यां रहितो वातः स्वरतश्चैव लक्षयेत् ॥

Yogaratnākara 13

In case of *kaphaja vikāra* voice becomes heavy. In case of *pittaja vikāra* voice bocomes clear, other than heavy and clear voice indicates *vāta* vitiation.

Please refer *Śrotrendriya parīkṣā* for more detail about *śabda parīkṣā* described under *sad vidha parīkṣā.*

स्पर्श परीक्षा (Examination by Touch)

पित्त रोगी भवेदुष्णो वातरोगी च शीतलाः ।
श्लेष्मलः स भवेदाद्रः स्पर्शतश्चैव लक्षयेत् ॥

Yogaratnākara P-13

- Hot touch perceived in *pittaja rogi.*
- Cold touch perceived in *vātaja rogi.*
- Moist touch perceived in *kaphaja rogi*
- Please refer *sparśanendriya parīkṣā* described under *sadvidha parīkṣā* for more detail.

दृक् परीक्षा (Examination of Eye)

Signs and symptoms in eye due to *Vātaja* eye disorders : These are *dhumra* (smoky), *aruṇa* (pink), *nila* (blue), *rūkṣa* (dry), *cañcala* (unsteady), *antaḥpraviṣṭa* (sunken), *raudra* (terrifying look) and *antarjvāla* (glows inside).

Signs and symptoms in eye due to *Pittaja* eye disorders : *Aruṇa* (pink), *haridrā* (yellow), *rakta* (red), *malina* (dirty), *tīkṣṇa* (penetrating), *prabhā* (lustrous), *dipadveśi* (photophobic), *dāhayukta* (burning sensation in eye) are the symptomatology observed in *pittaja* eye disorders.

Signs and Symptoms of eye due to *Kaphaja* eye disorders : *Śveta* (white), *dhavala* (glistening), *pluta* (watery), *snigdha* (greasy), *sthira* (steady), *jyotihina* (lusterless) *kaṇḍuyukta* (itching).

Please refer *pratyakṣa parīkṣā, cakṣurindriya parīkṣā* described elsewhere in this book for more information about *dṛk parīkṣā*.

जिह्वा परीक्षा (Examination of Tongue)

> **जिह्वा शीता खरस्पर्शा स्फुटिता मारुतेऽधिके।**
> **रक्ता श्यामा भवेत्पित्ते कफे शुभ्राऽतिपिच्छिला॥**
> *Yogaratnākara P-15*

- In case of *vātaja vikāra* tongue becomes cold, rough and fissures.
- In case of *pittaja vikāra* tongue becomes red, dark blue.
- In case of *kaphaja vikāra* tongue becomes white and excessively greasy.
- In case of *śannipātaja vikāra* tongue becomes black, ulcerations, fissures, dry.
- Mixed features observed in *dvandvaja vikarās.*

Conditions of Jihvā in various disorders

असित जिह्वा *(Asita jihvā)* Blackish tongue	मदात्यय असाध्य लक्षण *(Madātyaya asādhya lakṣaṇa)*
जिह्वा लेप *(Jihvā lepa)* Coated tongue	आम्लपित्त *(Āmlapitta)*
नील जिह्वा *(Nīla jihvā)* Bluish tongue	मदात्यय असाध्य लक्षण *(Madātyaya asādhya lakṣaṇa)*
जिह्वा निष्कर्ष्य *(Jihvā niṣkarṣya)* Prolapsed tongue	तृष्णा निरोधज दाह *(Tṛṣṇā nirodhaja dāha)*
जिह्वा शोष *(Jihvā soṣa)* Dryness of tongue	तृष्णा निरोधज दाह *(Tṛṣṇā nirodhaja dāha)*
जिह्वा स्तम्भ *(Jihvā stambha)* Stiffened tongue	जिह्वास्तम्भ *(Jihvāstamba)*
जिह्वा उपदेह *(Jihvāupadeha)* Coated tongue	प्रमेह पूर्वरूप *(Prameha pūrvarupa)*
जिह्वा वेपन *(Jihvā vepana)* Tongue tremor	तृष्णानिरोधज दाह *(Tṛṣṇānirodhaja dāha)*

आकृति परीक्षा (Ākṛti Parīkṣā)

आक्षेप *(Ākṣepa)* Convulsion	आक्षेपक *(Ākṣepaka)* अपस्मार *(Apasmāra)* अपतन्त्रक *(Apatantraka)* धनुस्तम्भ *(Dhanustambha)* वातव्याधि *(Vātavyādhi)*
अंगुलि वक्रता *(Anguli vakratā)* Curved finger	वातरक्त असाध्य लक्षण *(Vātarakta asādhya lakṣaṇa)*
आसीनोलभते सौख्यम् *(Āsinolabhate Saukhyam)* Comfort on sifting posture	तमकश्वास *(Tamaka Śvāsa)*
अवाध्मायते *(Avādhmāyate)* Change of posture intermittently	तमकश्वास *(Tamaka śvāsa)*
आयाम्यते देह *(Āyāmyate deha)* Stretching of body	हिक्का असाध्य लक्षण *(Hikkā asādhya lakṣaṇa)* स्नायुगत वात *(Snāyugata vāta)*
बलक्षय *(Balakṣaya)* Loss of strength	अस्थिगत वात *(Asthigata vāta)* ग्रहणीदोष पूर्वरूप *(Grahaṇī doṣa pūrvarupa)* हलीमक *(Halimaka)* जराशोष *(Jarā śoṣa)* वातज कास *(Vātaja kāsa)* मज्जागत वात *(Majjāgata vāta)* राजयक्ष्मा *(Rājayakṣmā)* रक्तार्श *(Raktārśa)* सूतिकारोग *(Sūtikā roga)* उदर रोग असाध्य लक्षण *(Udara roga asādhya lakṣaṇa)* उरःक्षत *(Uraḥkṣata)*
भग्न *(Bhagna)* Fracture of bone	भग्न रोग *(Bhagna roga)* वातव्याधि उपद्रव *(Vāta vyādhi upadrava)*
भ्रूशूनता *(Bhrū śūnatā)* Swollen eye brows	मृद्भक्षण जन्य पाण्डु *(Mridbhakṣaṇa janya pāṇḍu)*
देहवक्रता *(Deha vakratā)* Curved body	गृध्रसि *(Gṛdhrasi)*
ग्रीवा ग्रह *(Grivā graha)* Stiffness in neck	तमकश्वास *(Tamakaśvāsa)*
ग्रीवा हुण्डन *(Grivā*	वातव्याधि पूर्वरूप *(Vātavyādhi*

huṇḍana) Benumbed or paralysed neck	*pūrvarupa)*
ग्रीवा कम्प *(Grivā kampa)* Neck tremors	यमला हिक्का *(Yamalā hikkā)*
कम्प *(Kampa)* Tremors	वातज आम्लपित्त *(Vātaja āmlapitta)* अनन्तवात *(Ananta vāta)* वातज अपस्मार *(Vātaja apasmāra)* अर्दित पूर्वरूप *(Ardita pūrvarupa)* वातज अश्मरि *(Vātaja aśmarī)* यमला हिक्का *(Yamalā hikkā)* जराशोष *(Jarā śoṣa)* वातज ज्वर *(Vātaja jvara)* कम्पवात *(Kampa vāta)* मदात्यय उपद्रव *(Madātyaya upadrava)* वातज मूर्च्छा *(Vātaja mūrcchā)* विषज मूर्च्छा *(Viṣaja mūrcchā)* अश्मरिज मूत्रकृच्छ्र *(Aśmarīja mūtra kṛcchra)* पानात्यय उपद्रव *(Pānātyaya upadrava)* वातज पाण्डु *(Vātaja pāṇḍu)* वातज परिणामशूल *(Vātaja pariṇāmaśūla)* पत्रविष *(Patra viṣa)* वातज प्रमेह उपद्रव *(Vātaja prameha upadrava)* सूतिका रोग *(Sūtikā roga)* उरुस्तम्भ असाध्य लक्षण *(Urūsthambha asādhya lakṣaṇa)* वातरक्त असाध्य लक्षण *(Vātarakta asādhya lakṣaṇa)* विसूचिका *(Visūcikā)*

कार्श्य *(Kārśya)* Emaciation	अर्दित असाध्य लक्षण *(Ardita asādhya lakṣaṇa)* अर्श पूर्वरूप *(Arśa purvarupa)* अतिसार असाध्य लक्षण *(Atisāra asādhya lakṣaṇa)* छर्दिरोग असाध्य लक्षण *(Chardi roga asādhya lakṣaṇa)* गलगण्ड असाध्य लक्षण *(Gala-gaṇḍa asādhya lakṣaṇa)* गरविष *(Gara viṣa)* वातज ग्रहणी दोष *(Vātaja grahaṇī doṣa)* हिक्का असाध्य लक्षण *(Hikkā asādhya lakṣaṇa)* जराशोष *(Jarā śoṣa)* ज्वर असाध्य लक्षण *(Jvara asādhya lakṣaṇa)* कामज ज्वर *(Kāmaja jvara)* कफज एवं पुरीषज कृमि *(Kaphaja evam puriṣaja kṛmi)* पारिगर्भिका *(Pārigarbhikā)* रक्तगतवात *(Raktagata vāta)* सन्निपात उदर *(Sannipāta udara)* वातज स्तन्यपानज बालरोग *(Vātaja stanyapānaja bālaroga)* छिन्नश्वास *(Chinna śvāsa)* तृष्णा *(Tṛsṇā)* तृष्णा उपद्रव *(Tṛṣṇā upadrava)* उदावर्त असाध्य लक्षण *(Udāvarta asādhya lakṣaṇa)* वातज उन्माद *(Vātaja unmāda)* उरक्षत *(Urakṣata)* राजयक्ष्मा *(Rajayakṣmā)*
कुब्जत्व *(Kubjatva)* Hump backed / crooked body	कुब्जत्व *(Kubjatva)* स्नायुगत वात *(Snāyugatavāta)* वातव्याधि *(Vāta vyādhi)*

CHAPTER 4

Sapeksha Nidan - Vyavacchedaka Nidana

Sāpekṣa nidāna-Vyavachedaka nidāna (Differential diagnosis)

- It is defined as the process of distinguishing between possibilities of one disease versus that of other diseases with analogous symptoms that could probably observed in the patient.
- A differential diagnosis occurs when the signs & symptoms match more than one condition and additional tests are required to make accurate diagnosis.

Vyavachedaka nidan is done based on the following points

- Definition with *Pratyātma lakṣaṇa*
- Etiological factors
- Premonitory signs and symptoms
- Signs and symptoms and their severity & duration
- Localization of signs and symptoms
- Aggravating and reliving factors
- Clinical examination findings of the system concerned and findings of other system
- Ancillary investigations helps to differentiate various diseases
- Past medical and family history

Asthma

Symptoms of asthma include shortness of breath, wheezing, pain or a tight feeling in chest region associated with cough.

A differential diagnosis of asthma includes:

- Allergic rhinitis.
- Bronchitis.
- Chronic obstructive pulmonary disease (COPD).

Pneumonia.

Back pain

Symptoms of back pain include aching, burning or sharp, stabbing pain that increases when standing, walking, lifting objects or twisting.

A differential diagnosis of back pain includes

- Arthritis.
- Fibromyalgia.
- Disc hernia.
- Osteoporosis.

Chest pain

Symptoms of chest pain include aching, sharp pain, burning sensations, tightness or squeezing pressure localized in the chest region.

A differential diagnosis of chest pain includes:

- Angina.
- Muscle strain.
- Viral infection.
- Anxiety.
- Pneumonia.

Cough

Symptoms of a cough associated with sputum or without sputum and its colour, quantity and timing helps to differentiate the various conditions.

A differential diagnosis of cough includes:

- Asthma.
- Pneumonia.
- Seasonal allergies.
- Bronchitis.
- Reflux.

Depression

Symptoms of depression include fatigue, low energy, anxiety, showing a range of emotions and appetite changes.

A differential diagnosis of depression includes:

- Anxiety.
- Dementia.
- Bipolar disorder.
- Hypothyroidism.

Elevated alkaline phosphatase

Symptoms of elevated alkaline phosphatase include stomach or abdominal pain, nausea and vomiting and a yellow color to the skin (jaundice).

A differential diagnosis of elevated alkaline phosphatase:

- Blockage in the liver, gall bladder or bile ducts.
- Gallstones.
- Liver disease.

Fatigue

Symptoms of fatigue include feeling tired, lack of energy, not getting enough sleep and feeling weak throughout the entire body.

A differential diagnosis of fatigue includes but is not limited to :

- Anemia.
- Insomnia.
- Depression.
- Thyroid disease.

Knee pain

Symptoms of knee pain include swelling around the knee, instability when standing, stiffness and cracking noises in the knee region.

A differential diagnosis of knee pain includes:

- Arthritis.
- Osteoarthritis.
- Tendonitis.
- Cartilage tear.
- Strained ligaments.

Urinary tract infection (UTI)

Increased urinary frequency associated burning sensation

A differential diagnosis of a urinary tract infection includes:

- Chlamydia.
- Interstitial cystitis.
- Gonorrhea.
- Vaginal yeast infection.

References

Differential Diagnosis. Cleveland Clinic logo. https://my.clevelandclinic.org/health/diagnostics/22327-differential-diagnosis

Acute Abdominal Pain

Symptoms of abdominal pain include an ache, cramps or sharp pains at mild to severe levels localized to a specific area in the abdomen region.

A differential diagnosis of abdominal pain includes:

- Gastroenteritis
- Cholecystitis
- Appendicitis
- Peptic ulcer
- Pancreatitis
- Diverticulitis
- Intestinal obstruction
- Perforated viscus
- Ectopic pregnancy
- Pelvic inflammatory disease (PID)
- Reflux esophagitis
- Myocardial infarction
- Renal calculus
- Hepatitis

Differential diagnosis points

With these possibilities in mind, you will begin your interview by asking for the location of the pain.

- If it's right upper quadrant (RUQ), consider cholecystitis or duodenal ulcer.
- If it's epigastric, consider the possibility of pancreatitis, gastric ulcer, reflux esophagitis, and myocardial infarction.
- Pain in the right lower quadrant brings up the possibility of appendicitis,ectopic pregnancy, and PID,
- Pain in the left lower quadrant suggests diverticulitis, ectopic pregnancy, and PID.
- Diffuse abdominal pain is consistent with gastroenteritis and peritonitis either primary or secondary to a ruptured viscus (ruptured peptic ulcer, etc.).
- Diffuse abdominal pain also suggests intestinal obstruction.
- Next, determine if the pain is constant (cholecystitis, appendicitis, diverticulitis, etc.) or intermittent (biliary colic, renal colic, intestinal obstruction).

  The severity of the pain may shed some light on the diagnosis.
- The most severe pain will be caused by acute pancreatitis, ruptured viscus, biliary or renal colic.

Meals

- Is the pain associated with meals? Pain from peptic ulcer and reflux esophagitis occurs 1 to 2 hours after meals, while pain from cholecystitis or cholelithiasis typically occurs 2 to 3 hours after meals.

Associated symptoms

- These are usually the key to the diagnosis.
- Diarrhea, nausea, and vomiting are typical of gastroenteritis
- The loss of appetite, mild nausea, and fever are more typical of appendicitis.
- Severe nausea and vomiting is common with cholecystitis, intestinal obstruction, pancreatitis, and renal colic.
- Look for a vaginal discharge if you suspect PID, and amenorrhea, morning sickness and tender breasts if you suspect an ectopic pregnancy.
- A myocardial infarction should be suspected if there is severe diaphoresis without significant fever and a history of diabetes, hyperlipemia, or hypertension.
- Acute pancreatitis is suspected if there is a history of alcoholism
- The reflux esophagitis should be suspected if there is a history of recurrent regurgitation of food or acid especially on lying down after a meal.

On physical examination, always check for rebound tenderness.

- If this is in the RUQ, suspect cholecystitis.
- If it is localized to the right lower quadrant, suspect acute appendicitis.
- Rebound tenderness in the left lower quadrant is suspicious of diverticulitis.
- PID and ectopic pregnancy may also be associated with rebound tenderness in one or both lower quadrants.
- Diffuse rebound tenderness suggests pancreatitis or ruptured viscus, especially a ruptured peptic ulcer and peritonitis.

Mass in the abdomen

- A tender mass in the RUQ suggests cholecystitis or hepatitis
- A mass in the right lower quadrant suggests a ruptured appendix. Look for a mass in the groin or umbilicus (hernia) in intestinal obstruction.

Icteric sclera points to cholecystitis and hepatitis.

Hyperactive bowel sounds

These are the rule in intestinal obstruction, while decreased or absent bowel sounds is highly suggestive of peritonitis or a ruptured viscus.

Vaginal examination

It will reveal a tender adnexal mass in PID, ectopic pregnancy, and inflamed pelvic appendix.

Murphy's sign

- Look for Murphy's sign if you suspect cholecystitis

Rovsing's sign

- Rovsing's sign in appendicitis.
- A reverse Rovsing's sign may be found in diverticulitis of the sigmoid colon.

Testicles

- A retracted testicle on the right was consistent with appendicitis, while a retracted testicle on the left was consistent with diverticulitis
- If both testicles are retracted, suspect peritonitis

Rectal examination

- It may reveal gross blood in intussusception or mesenteric thrombosis, or occult blood in these conditions plus peptic ulcer disease, diverticulitis, and carcinoma of the bowel.

Note

The diagnostic workup is essential to confirm the impressions after a history and physical examination as well as to rule out other possibilities

अनुक्तव्याधि (Anuktavyādhi)

General diagnostic principles of Anuktavyādhi

विकारनामाकुशलो न जिह्रीयात् कदाचन ।
न हि सर्वविकाराणां नामतोऽस्ति ध्रुवा स्थितिः ॥
स एव कुपितो दोषः समुत्थानविशेषतः ।
स्थानान्तरगतश्चैव जनयत्यामयान् बहून् ॥
तस्माद्विकारप्रकृतीरधिष्ठानान्तराणि च ।

समुत्थानविशेषांश्च बुद्ध्वा कर्म समाचरेत् ॥
यो ह्येतत्त्रितयं ज्ञात्वा कर्माण्यारभते भिषक् ।
ज्ञानपूर्वं यथान्यायं स कर्मसु न मुह्यति ॥
C.Su 18/44-47

Physician should not feel ashamed if he fails to give nomenclature to the disease because it is not always possible to provide nomenclature to all types of diseases in specific conditions. The exacerbated and agitated *Doṣās* may cause diverse diseases depending upon *Samūtthāna* (the various etiological factors) and the *Sthāna* (sites of manifestation). Hence the physician should commence management strategies after considering the *Vīkara Prakṛtī* (nature of the disease) based on the involvement of *Doṣa*, the *Adhiṣṭhāna* (site of its manifestation) and *Samūtthana Viśeṣa* (etiological factors). One who commence the treatment after acquiring the full knowledge of these three aspects and pays due regard to scriptural directions would never fail in his endeavour to cure the disease.

स्थानान्तरगत- The *Doṣa* which lodged in single place can able to produce different diseases.

For example- *Gala Stita Doṣa* (*Doṣa* vitiated at neck region) can cause *Kāsa, Svarabheda, Kaṇṭhodvaṁsa, Arocaka* etc.

अधिष्ठानान्तराणि आशयान्तराणि - according to origin of disease the presentation and symptoms differs.

नामाज्ञानं तु व्यवहारमात्रप्रयोजनार्थं न स्वरूपेण चिकित्सायामुपकारीति- The naming of disease is benefited for identification and easy understating of disease not as such directly related to treatment. The complete knowledge of *Tridoṣa, Sthāna, Adhīṣṭhāna* and *Prakṛti* one can able to treat the disease effectively.

नास्ति रोगो विना दोषैर्यस्मात्तस्माद्विचक्षणः अनुक्तमपि दोषाणां लिङ्गैर्व्याधिमुपाचरेत् । *S.Su.35/19*

Disease does not develop without the involvement of dosas. Hence the intelligent physician should treat the unmentioned diseases as per the symptoms of *doṣās*.

रोगायेऽप्यत्रनोद्दिष्टाबहुत्वान्नामरूपतः ।
तेषामप्येतदेवस्याद्दोषादीन्वीक्ष्य भेषजम् ।
दोषदूष्यनिदानानां विपरीतं हितं ध्रुवम् ।
उक्तानुक्तान् गदान् सर्वान् सम्यग्युक्तं नियच्छति ॥
C.Ci 30/291-292

Treatment of Unnamed Diseases

Caraka said that there are several other diseases which are not described in the texts with names and forms and such diseases are to be treated on the lines suggested in the *Cikitsāsthāna* after examining the *Doṣās* and such other factors involved in their manifestation. Some says the other factors are *dūṣyās* (tissue elements) and causative factors. Others says the other factors refer to *bheṣaja* (therapeutic measures), *deśa* (location), *kāla* (time), *bala* (strength), *śarīra* (physical features), *āhāra* (diet), *Śātmya* (wholesomeness), *sattva* (mental attitude), *prakṛti* (constitution) and *vayas* (age).

Line of treatment of all diseases which are named or unnamed in the texts

Therapies which are opposite to the properties of the *doṣās, dūṣyās* (tissue elements) and etiological factors involved in the development of the disease are undoubtedly valuable for eradication of diseases. If physician apply this concept judiciously for the treatment of any diseases whether they are named or not in the text to get the desired success in the treatment.

Therapeutic measures which are opposite to *nidāna* (Causative factors) are necessarily opposite of ununctuousness will also alleviate *vāta*. Even then in the aforesaid statement, *nidāna* and *doṣās* are mentioned separately in order to indicate the need for therapeutic measures which are opposite to not only a part of the *doṣa* but to the whole of it. For example, when *vāta* is aggravated in its entirety, then oil which is opposed to the entire *vāta* should be administered. When only the code attribute of *vāta* is aggravated, then oil need not be used, and for this condition, only hot ingredients which are opposite to the causative factors *nidāna)* and only hot *(hetu-viparīta))* in effect are to be administered. By mentioning *doṣās* and *dūṣyās*, the disease which is caused by their vitiation or aggravation is also included. Thus, therapeutic measures opposite of the disease *(vyādhi-viparīta)* in effect are to be administered to get desired result. The term *'viparīta'* used here refers to the 'antagonistic measures' and not simply those having opposite attributes. Thus, therapeutic measures which are not actually opposite in attributes but act an antagonistic way *(viparītārthakāri)* are also included here. Diseases are caused both by the aggravation and diminution of *doṣās* as well as *dhātus*. If these elements are diminished in quantity, then for their augmentation, therapeutic measures which are similar in property are to be given. Such therapeutic measures given for the augmentation of the *doṣās* and *dhātus*, though similar in property, cure the disease. Thus, these are to be treated as of opposite nature *(viruddha)*. In such conditions, therapeutic measures which are opposed to *doṣās* are not to be given but those which are opposed to the diminution of *doṣās* (these are obviously possessed of attributes which are similar to the *doṣās* and *dhātus*) are to be administered.

Appropriate use of therapeutic measures

देशकालप्रमाणानांसात्म्यासात्म्यस्यचैव हि।
सम्यग्योगोऽन्यथाह्येपां पथ्यमप्यन्यथाभवेत् ॥

C.Ci. 30/293

Restorative measures should be used judiciously considering the following points to get success in the management of diseases:

- *Deśa* (Location)
- *Kāla* (time)
- *Pramāṇa* (dose)
- *Sātmya* (wholesomeness)
- *Asātmya* (unwholesomeness)

Otherwise, even a useful therapy *(pathya)* may become harmful *(apathya)*.

Deśa (Location)

The term *'deśa'* means both the patient's body *(deha-deśa)* and the place of habitation. In the present context, this term refers to the physique of the patient. The place of habitation will be described under the category *'sātmya'* (wholesomeness).

Kāla (time)

Kāla or time has six aspects, viz., day, patient, medicine, disease, signs of proper digestion and season.

Pramāṇa (dose)

The *pramāṇa* (dosage) is of three types, viz., (1) small dose, (2) big dose, and (3) moderate dose

Sātmya (wholesomeness) and Asātmya (unwholesomeness)

The term *Sātmya* or wholesomeness refers to the place of habitation *(deśa-sātmya)* and the physique of the individual *(śarīra-sātmya)*. Wholesomeness to the disease *(vyādhi-sātmya)* is included in the category of medicine. Wholesomeness to season *(ṛtu-sātmya)* is already included in the category of time. Wholesomeness of the dosage is covered under the category 'appropriate method of administration' *(samyag-yoga)*. Opposite of this is *asātmya*.

Relation of Doṣās with body

नित्याः प्राणभृतां देहे वातपित्तकफास्त्रयः ।
विकृताः प्रकृतिस्था वा तान् बुभुत्सेत पण्डितः ॥

A physician should make an attempt to know whether *Tridoṣās* viz. *Vāta*, *Pitta* and *Kapha* located in the body are in *Prākṛta avasthā* (normal state) or *Vīkṛta avasthā* (abnormal state).

CHAPTER 5

Upashaya / Anupashaya

उपशय (Upaśaya)

सुखावहमिति सुखं रोगनिवृत्तिलक्षणम् ।

M.Ni 1/9 (Madhukoṣa)

The word pleasure used in context to *upaśaya* means which gives happiness and pacify the disease. Certain things are not included under *upaśaya* even though they give happiness for a short period. For example cold water gives relief to thirst and burning sensation in case of *navajvara* for a short period but later aggravates the condition. This doesn't comes under *upaśaya*. Certain things gives instant pleasure like wearing garlands, application of sandal paste and women but these things are not considered ad *upaśaya*. That's why specifically medicine, food and regimen mentioned.

उपशयः पुनर्हेतुव्याधिविपरीतानां विपरीतार्थकारिणां चौषधाहार विहाराणामुपयोगः सुखानुबन्धः । *C.Ni 1/10*

Upaśaya means which gives pleasure to the person by the use of medicine, diets and regimens. Their action may directly against the cause, or to the disease itself or to the both. (i.e. to cause and disease.)

सुखानुबन्ध इति सुखरूपोऽनुबन्धः । अनुबन्धश्च सुखकरणमित्यर्थः । अयश्चोपशयो गूढलिङ्गे च व्याधौ ज्ञानोपायो भवति । *C.Ni 1/10 (Cakrapāṇi)*

Upaśaya means which bring about feeling of happiness. Factors which creates environment for happiness are called *upaśaya.* It is also helpful in detecting the cases where difficulty arised due to similarities in symptomatology, in such circumstances *upaśaya* helps to diagnose the case accurately.

For example :

गूढलिङ्गं व्याधिमुपशयानुपशयाभ्यां । *C.Vi 4/8*

In case of difficulty in a diagnosis of disease due to some hidden things or mimicking nature of disease in such circumstances *upaśaya* and *anupaśaya* therapy helps to diagnose the condition.

For example :

वक्ष्यति च गुल्मे स्नेहोष्णमर्दनाभ्याञ्च प्रणश्येत् स च वातिकः ।

C.Ni 1/10 (Cakrapāṇi)

Gulma which alleviates by unctuous substances, hot things and massage indicates that person is suffering from *vātaja gulma.*

हेतुव्याधि विपर्यस्तविपर्यस्तार्थकारिणाम् ।
औषधान्न विहाराणामुपयोगं सुखावहम् ।
विद्यादुपशयं व्याधेः स हि साम्त्यमिति स्मृतः ॥

A.Hr.Ni 1/6-7

Factors like medicines, activities, food gives relief by using them directly against the cause, or to the disease itself or by both is called *upaśaya* and which is conducive to the bodies physiological system.

सात्म्यं नाम तद् यदात्मन्युपशेते; सात्म्यर्थो ह्युपशयार्थः ।

C.Vi. 1/20

Things which are conducive to body physiology are called *sātmya* and use of such substances brings pleasure is called *upaśaya.*

उपशय भेद (Classification of Upaśaya)

It can be classified into 18 sub types namely

1. *Hetu Viparita Auṣadha*
2. *Hetu Viparita Anna*
3. *Hetu Viparita Vihāra*
4. *Vyādhi Viparita Auṣadha*
5. *Vyādhi Viparita Anna*
6. *Vyādhi Viparita Vihāra*
7. *Hetu-Vyādhi Viparita Auṣadha*
8. *Hetu-Vyādhi Viparita Anna*
9. *Hetu-Vyādhi Viparita Vihāra*
10. *Hetu Viparitārthakāri Auṣadha*
11. *Hetu Viparitārthakāri Anna*
12. *Hetu Viparitārthakāri Vihāra*

13. *Vyādhi Viparitārthakāri Auṣadha*
14. *Vyādhi Viparitārthakāri Anna*
15. *Vyādhi Viparitārthakāri Vihāra*
16. *Hetu Vyādhi Viparitārthakāri Auṣadha*
17. *Hetu Vyādhi Viparitārthakāri Anna*
18. *Hetu Vyādhi Viparitārthakāri Vihāra*

So, *Upaśaya* means getting comfort by the use of medicines, food and activities which are either *viparita* (opposite) or *viparitārthakāri* (producing the opposite effect though not actually opposite) of the etiology of the disease, or disease itself or both.

1. हेतु विपरीत औषध *(Hetu Viparita Auṣadha)*

(Drugs antagonistic to the cause of the disease)

हेतुविपरीत मौषधम्, यथा शीतकफज्वरे शुण्ठ्यद्युष्णं भेषजम् ।

C.Ni 1/10 (Cakrapāṇi)

Usage of *śunṭhi* against *śitakaphajvara* due to its hotness.

ये च शीतकृता रोगास्तेषां मुष्णं भिषग्जितम् । श्रमजे श्रमहरं द्राक्षादिदशकम् । C.Ni 1/10 (Gaṅgādhara)

Hot potency drugs may be employed for the person who is suffering from diseases due to cold effect and vice versa. *Drākṣādi yoga* is advised to overcome exhaustion.

2. हेतु विपरीत अन्न *(Hetu Viparita Anna)*

(Food which is antagonistic to the cause of the disease)

हेतुविपरीतमन्नं, यथा श्रमानिलजे ज्वरे रसौदनः ।

C.Ni 1/10 (Cakrapāṇi)

Intake of meat juice in case of *vātajvara* and fatigue.

3. हेतु विपरीत विहार *(Hetu Viparita Vihāra)*

(Regimen antagonistic to the cause of the disease)

हेतुविपरीतो विहारः, यथा दिवास्वप्नोत्थकफे रात्रौ जागरणम् ।

C.Ni 1/10 (Cakrapāṇi)

Remaining awake in night in case of aggravation of *kapha* due to day sleep.

स्निग्धदिवानिद्राजायां कफवृद्धौ तज्जे च ज्वरे रात्रिजागरणं रूक्षं दिवानिद्रा विपरीतम् । इति विहारः ।

C.Ni 1/10 (Gaṅgādhara)

Intake of slimy substances followed by day sleep aggravates *kapha* and manifest *kaphaja jvara* and it can be managed by consumption of rough substances followed by awakening at night.

4. व्याधी विपरीत औषध *(Vyādhi Viparita Auṣadha)*

(Drugs antagonistic to the disease itself)

व्याधिविपरीतमौषधंम, यथा अतिसारे स्तम्भनं पाठादि ।

C.Ni 1/10 (Cakrapāṇi)

Use of antidiarrheal drugs like *pāṭha* etc in case of *atisāra*.

व्याधिविपरीतमौषधं यथा रौक्ष्यगुणतो वातवृद्धौ स्निग्धं भद्रदार्वादिकम् । अतिसारे स्तम्भनं पाठादि । विषे शिरिषः । कुष्ठे खदिरः । प्रमेहे हरिद्रा । तृष्णाघ्नादिकम् दशकं दशकम् ।

C.Ni 1/10 (Gaṅgādhara)

Usage of slimy drugs like *bhadradāru, devadāru* in case of aggravation of *vāta* due to usage of rough substances.

- *Pāṭha* in *Atisāra Rogi*
- *Śiriṣa* in *Viṣa Roga*
- *Khadirā* in *Kuṣṭha*
- *Haridrā* in *Prameha*
- *Daśakam* in *Triṣṇā*

5. व्याधी विपरीत अन्न *(Vyādhi Viparita Anna)*

(Food antagonistic to disease)

व्याधिविपरीतमन्नं, यथा अतिसारे स्तम्भनं मसूरादि ।

C.Ni 1/10 (Cakrapāṇi)

Intake of food which are supporting antidiarrhoeal activity i.e. usage of *masūra* etc. in *atisāra rogi*.

व्याधिविपरीतमन्नं यथा रौक्ष्यगुणतो वायुवृद्धौ स्निधं घृतादिकम् ।अतिसारे स्तम्भनं मसूरयूषादि ।

C.Ni 1/10 (Cakrapāṇi)

Usage of slimy substances like *ghee* against aggravated *vāta* by using rough substances. *Masūra, yūṣa* etc. are advised to support antidiarrheal activities in *atisāra*.

6. व्याधी विपरीत विहार *(Vyādhi Viparita Vihāra)*

(Regimen antagonistic to disease)

व्याधिविपरीतो विहारः, यथा उदावर्ते प्रवाहणम् ।

C.Ni 1/10 (Cakrapāṇi)

Pravāhaṇa (making downward peristalsis) is the treatment for *udāvarta rogi.*

व्याधिविपरीत विहारस्तु रौक्ष्यगुणतो वातवृद्धौ दिवानिद्रा ।
C.Ni 1/10 (Gaṅgādhara)

Advising day sleep for the person who is suffering from *vāta vṛddhi* due to awakening at night.

7. हेतु व्याधि विपरीत औषध (*Hetu-Vyādhi Viparita Auṣadha)*

(Drugs antagonistic to cause and disease)

हेतुव्याधिविपरीतमौषधं, यथा वातशोथे वातहरं शोथहरञ्च दशमूलम् । *C.Ni 1/10 (Cakrapāṇi)*

Usage of *daśamūla kvātha* in case of *vātaja śotha*, which subsides *vāta* as well as *śotha*.

8. हेतु व्याधि विपरीत अन्न *(Hetu-Vyādhi Viparita Anna)*

(Food antagonistic to cause and disease)

हेतु व्याधिविपरीतमन्नं, यथा शीतोत्थज्वरे उष्ण ज्वरघ्नी यवागूः । *C.Ni 1/10 (Cakrapāṇi)*

Usage of hot substances and antipyretic gruel against *śitottha jvara,* which subsides cold and fever.

9. हेतु व्याधि विपरीत विहार *(Hetu-Vyādhi Viparita Vihāra)*

(Regimen antagonistic to cause and disease)

हेतुव्याधिविपरीतो विहारः, यथा स्निग्ध दिवास्वप्नजयां तन्द्रायां रुक्षं तन्द्राविपरीतं रात्रिजागरणम् । *C.Ni 1/10 (Cakrapāṇi)*

Indulging in activities like awakening in night etc. which brings roughness in case of *tandrā*, which manifest due to intake of slimy substances followed by day sleep.

10. हेतु विपरीतार्थकारि औषध (*Hetu Viparitārthakāri Auṣadha)*

(Drugs which are working against the causative factors of the disease though not actually against)

हेतुविपरीतार्थकार्य्यौषधं, यथा पित्तप्रधाने पच्यमाने शोथे पित्तकर उष्ण उपनाहः । *C.Ni 1/10 (Cakrapāṇi)*

Application of hot substances in case of *pacyamāna śotha,* which aggravates *pitta* and helps for speedy recovery.

अथ हेतुविपरीतार्थकारि औषधं यथा कटुरसातियोगजनिते शुक्रक्षये वृष्यं पिप्पलीशुण्ठ्यादिकं ।
C.Ni 1/10 (Gaṅgādhara)

Usage of *vṛṣya* drugs like *pippali, śuṇṭhi* etc. in case of *śukrakṣaya* due to intake of excess pungent substances.

11. हेतु विपरीतार्थकारि अन्न (Hetu Viparitārthakāri Anna)

(Food which are working against the causative factors of the disease though not actually against)

हेतुविपरीतार्थकार्य्यान्न, यथा पथ्यमाने पित्तप्रधाने शोथे विदाहि अन्नम् । *C.Ni 1/10 (Cakrapāṇi)*

Usage of food substances which are hot in case of *pacyamāna śotha* due to *pitta doṣa.*

हेतुविपरीतार्थकार्य्यान्नं यथा रुक्षाहारातियोगजे शुक्रक्षये रुक्षः पुराणगोधूमो वृष्यः । *C.Ni 1/10 (Gaṅgādhara)*

Intake of dry old wheat as a *vṛṣya* in case of *śukrakṣaya* due to consumption of rough and dry substances in excess.

12. हेतु विपरीतार्थकारि विहार *(Hetu Viparitārthakāri Vihāra)*

(Regimen which are working against causative factors of the disease though not actually against)

हेतु विपरीतार्थकारि विहारः यथा वातोन्मादे त्रासनम् ।
C.Ni 1/10 (Cakrapāṇi)

Inducing fear to the patients who is suffering from *vātaja unmāda.*

13. व्याधि विपरीतार्थकारि औषध *(Vyādhi Viparitārthakāri Auṣadha)*

(Drugs which are working against the disease though not actually against)

व्याधिविपरीतार्थकार्य्यौषधं, यथा छर्द्यां वमनंकारकं मदन फलम् । *C.Ni 1/10 (Cakrapāṇi)*

Usage of emetic drug *madana phala* in case of *chardi* (vomiting)

14. व्याधि विपरीतार्थकारि अन्न (*Vyādhi Viparitārthakāri Anna)*

(Food which is working against the disease though not actually against)

व्याधिविपरीतार्थकार्य्यन्नं, यथा अतिसारे विरेककारकं क्षीरम् ।
C.Ni 1/10 (Cakrapāṇi)

Intake of milk in case of *atisāra*, which induces purgation.

बहुदोषस्य दीप्ताग्नेः सप्राणस्य न तिष्ठति पैत्तिको यद्यतिसारः पयसा तं विरेचयेत् ॥ *C.Ni 1/10 (Cakrapāṇi)*

In case of *pittaja atisāra* (who is suffering from severe morbid factors along with enhanced power of *agni*) milk may be advised which induces purgation.

15. व्याधि विपरीतार्थकारि विहार *(Vyādhi Viparitārthakāri Vihāra)*

(Regimen which is working against the disease though not actually against)

व्याधिविपरीतार्थकारि विहारो यथाछर्द्यांछर्दि साध्यायां वमनार्थं प्रवाहणम् । *C.Ni 1/10 (Cakrapāṇi)*

Inducing vomiting by external support in case of *chardi* (vomiting)

व्याधिविपरीतार्थकारि विहारस्तु सस्नेह पित्तवृद्धिजाते स्निग्धे दिवास्वप्नः । *C.Ni 1/10 (Cakrapāṇi)*

Application of unctuous oil followed by day sleep in case of aggravated *pitta* due to application of unctuous substances.

16. हेतु व्याधि विपरीतार्थकारि औषध *(Hetu Vyādhi Viparitārthakāri Auṣadha)*

(Drug which is working against the cause and disease though not actually against)

हेतुव्याधिविपरीतार्थकार्य्यौषधं, यथा अग्निना प्लुष्टेऽगुर्वादिना लेपः । उष्णं हि हेतावाग्नौ व्याधौ चानुगुणं प्रतिभाति ।
C.Ni 1/10 (Cakrapāṇi)

Use of *aguru dravya lepa* in case of *agnipluṣṭa dagdha* (burn due to fire). Here cause is hot and applied medicine is also hot.

अथोभयविपरीतार्थकारि चौषधं यथा । कटुम्लोष्णाहारात् पित्तवृद्धौ अम्लमामलकं पित्तहरम् । जाङ्गमविषे मौलविषं मौले जाङ्गमम् । *C.Ni 1/10 (Gaṅgādhara)*

- Usage of *āmla rasa* dominant *āmlaka* to pacify *pitta,* which aggravated due to consumption of pungent, sour and hot substances.
- *Mūla visa* against *jāṅgama viṣa* and vice *versa.*

17. हेतु व्याधि विपरीतार्थकारि अन्न *(Hetu Vyādhi Viparitārthakāri Anna)*

(Food which is working against cause and disease though not actually against)

हेतुव्याधिविपरीतार्थकार्य्यन्नं, यथा मद्यपानोत्थे मदात्यये मदयुक्ते मदकारकं मद्यम् । *C.Ni 1/10 (Cakrapāṇi)*

Usage of intoxicating alcohol against alcoholism induced by consumption of alcohol.

उभयविपरीतार्थकारिचान्नं यथा तीक्ष्णरूक्षाहारजाते पित्तरोगे मन्दं स्निग्धम् घृतम् । *C.Ni 1/10 (Gaṅgādhara)*

Administration of mild unctuous ghee in case of *pitta vikāra* caused due to intake of penetrating and rough substances.

18. हेतु व्याधि विपरीतार्थकारि विहार *(Hetu Vyādhi Viparitārthakāri Vihāra)*

(Regimen which is working against the cause and disease though not actually against)

हेतुव्याधिविपरीतार्थकारि विहारः, यथा व्यायामजनित सम्मूढवाते जलप्रतरणादिरूपो व्यायामः । अयं हेतौ व्यायामे व्याधौ च सम्मूढवातेऽनुगुणः प्रतिभाति । *C.Ni 1/10 (Cakrapāṇi)*

Swimming therapy advised in the form of exercise in case of *vātavyādhi* manifested due to excessive exercise. Here *vyāyāma* is the therapy which works against cause and disease.

अनुपशय (Anupaśaya)

विपरीतोऽनुपशयो व्याध्यसास्त्माभिसंज्ञितः ।
A.Hr.Ni 1/7

Opposite to the description of three *upaśaya* is called *anupaśaya,* which is not conducive to the body.

विपरीतोऽनुपशय इति औषधादीनां दुःखकर उपयोगोऽनुपशय इत्यर्थः । *M.Ni 1/9 (Madhukoṣa)*

Medicines, food and regimen which are not conducive to the body and develop displeasure to the body is called *anupaśaya.* It is also called *asātmya.*

किन्तु निदाने तस्यान्तर्भावः, दोषस्य रोगस्य वा वर्धकत्वात् ।
M.Ni 1/9 (Madhukoṣa)

It is not considered as a separate entity under five means of diagnosis due to its similarity with etiology because both *anupaśaya* and *hetu* enhances *doṣās* and disease. That's why *anupaśaya* considered under etiology.

Examples for *Upaśaya*

Sr. No.	***Types of Upaśaya***	***Auṣadha***	***Āhara***	***Vihāra***
1.	*Hetu Viparīta*	*Śitajanya Kaphaja Jvara-Uṣṇa Guṇa yukta Śuṇṭi Prayoga*	*Śrama Janya Vātika Jvara-Śramahara Māṁsa Rasa*	*Divā śayana Kapha Vṛddhi-Rātri Jāgaraṇa*
2.	*Vyādhi Viparīta*	*Atisāra- Pāṭha for Stambhanārtha*	*Atisāra- Masura for Stambhanārtha*	*Udavarta - Pravahana*
3.	*Hetu Vyadhi Viparita*	*Vātika Śotha-Daṣamūla Prayoga*	*Śitajanya Jvara-Uṣṇa Guṇayukta Yavāgu*	*Snigdha Divāsvapnajanya Tandrā-Rukṣa Tandrāhara Rātrijāgaraṇa*
4.	*Hetu Viparītārthakāri*	*Pitta Pradhāna Pacyamāna Śotha-Uṣṇa Upanāha .*	*Pitta Pradhāna Pacyamāna Śotha-Vidāhi Annapāna*	*Vātaja Unmāda-Bhaya Darśana*
5.	*Vyādhi Viparītārthakāri*	*Chardi-Vamanārtha Madanaphala Prayoga*	*Atisāra-Virecanārtha Kṣīra Prayoga*	*Vamana Sadhya Chardi-Pravāhaṇa*
6.	*Hetu Vyādhi Viparītārthakāri*	*Pluṣṭa Dagdha-Agaru Uṣṇa Lepa*	*Madātyaya-Madhyapāna*	*Mūḍavāta-Jala Prataraṇādi rūpa Vyāyam*

Diagnostic Importance of Hetu

Hetu gives idea about the existing disease and it also gives an idea about the unmanifested disease. Each disease has its own *hetu*. For example :

Eating mud causes *pāṇḍu roga* (i.e. *mṛdbhakṣaṇajanya pāṇḍu roga*)

Therapeutic Importance of Hetu

1. *Hetu* is the prime factor for the causation of disease. That's why both *Caraka* and *Suśruta* mentioned to avoid the etiological factor and it is the primary step in the management of any diseases.

संक्षेपतः क्रियायोगो निदानस्य परिवर्जनम् । *S.Utt. 1/25*

Avoid the causative factors, which are responsible for causation of disease and it is the primary step to prevent further pathogenesis.

अनन्तरं निदानोक्तानां भावानामनुपसेवनमिति । *C.Vi 7/14*

Avoid the etiological factors for smooth recovery of any diseases.

Prognostic Importance of Hetu

1. Powerful *hetu* signifies difficult to cure or incurable one.

Mild *hetu* indicates disease become curable without difficulty. So, *hetu* gives idea about the prognosis of disease.

CHAPTER
6

Dosha Vikriti

हेतु परिभाषा, पर्याय एवं भेद (Hetu Paribhāṣa, Paryaya Evam Bheda)

हेतुभूत (Etiological factors)

व्याध्युत्पत्ति हेतु र्निदानम् ॥

M.Ni 1/2 (Madhukoṣa)

Factors which manifest disease is called *nidāna*.

तत्र निदानं वाय्वादि प्रकोपः ।
तस्य पुनरहिताहार विहारसेवा ॥

A.S. Ni 1/7

Nidāna means one which aggravates *vātādi doṣās*. It may be due to intake of incompatible dietetics and improper activities.

तत्र निदानं कारण मित्युक्त मग्रे ॥

C.Ni. 1/7

It describes causative factors of the disease.

सेतिकर्तव्यताको रोगोत्पादक हेतुर्निदानम् ॥

M.Ni 1/4 (Madhukoṣa)

A factor which is capable of manifesting the development of disease either quickly or after a certain period is called *hetu*.

निदान पर्याय (Synonyms of Nidāna)

निदानपर्यायास्तु हेतुर्निमित्तमायतनं कारकः कर्ता कारणं प्रत्ययः समुत्यानं मूलं योनिरिति । *A.S. Ni 1/7*

Hetu, nimitta, āyatana, kāraka, kartā, kāraṇa, pratyaya, samutthanam, mūlam, yoni are the synonyms of *nidāna*.

Hetu– It performs multidimensional actions in the initiation of disease process by aggravating *vātādi doṣās*.

Nimitta– Certains signs manifested in the body, act as causative factors for the disease.

Āyatana– It indicates the place of origin of disease.

For example : *Jāṅgala deśa* is predominant of *vāta* and favours the manifestation of *vātavyādhi*.

Kāraka– Disease producing agent.

Kartā– Main culprit to bring inequilibrium state of *doṣās, duṣyās* etc for the production of disease.

Kāraṇa– The factors which disturbs the normal physiological functions and capable of manifesting disease are called *Kāraṇa*.

Pratyaya– It means faith in certain objects. Person may not be knowing that these faithful objects may act as a disease causative agent due to blasphemy. Intake of unwholesome food unknowingly is called *pratyaya*.

Samutthāna– It is main fundamental factor for initiation of disease process and it originates certain factors i.e. *samutthāna*.

Mūla–It is the root cause for the initiation of *vyādhi*.

Yoni– Without *nidāna* disease can't manifest that's why it is called as source for *vyādhi*.

हेतु भेद (Classification of Hetu)

Four types of Hetu

सन्निकृष्ठ विप्रकृष्ठ व्यभिचारि प्राधानिक भेदाच्चतुर्धा ।

M.Ni 1/5

1. *Sannikṛṣṭa Hetu*
2. *Viprakṛṣṭa Hetu*
3. *Vyabhicāri Hetu*
4. *Prādhānika Hetu*

Three types of Āyatana

त्रीण्यायतनानिति-अर्थानां कर्मणंः कालस्य चातियोगा-योगमिथ्यायोगः ॥ *C.Su. 11/37*

त्रिविधो वा, असात्म्येन्द्रियार्थ संयोग प्रज्ञापराध परिणाम भेदात् ॥ *M.Ni 1/5 (Madhukoṣa)*

1. *Asātmyendriyārtha Saṁyoga (Arthānāṁ)*
2. *Prajñāparādha (Karmaṇa)*
3. *Pariṇāma (Kāla)*

Three types of Hetu

दोष व्याध्युभय हेतु भेदाच्च स त्रिविधः ॥

M.Ni 1/5 (Madhukoṣa)

1. *Doṣa Hetu* 2. *Vyādhi Hetu*
3. *Ubhaya Hetu*

Two types of Hetu

स एवोत्पादक व्यञ्जक भेदाच्च द्विधा ।

M.Ni 1/5 (Madhukoṣa)

1. *Utpādaka Hetu* 2. *Vyañjaka Hetu*

Two types of Hetu

बाह्याभ्यन्तर भेदाच्च द्विधा । *M.Ni 1/5 (Madhukoṣa)*

1. *Bāhya Hetu* 2. *Abhyantara Hetu*

Hetu is divided into two kinds

तत्र दोषोऽपि प्रकुपितः प्राकृतादि भेदादनेकधा ।

M.Ni 1/5 (Madhukoṣa)

1. *Prākṛta Hetu* 2. *Vaikṛta Hetu*

Two types of Hetu

अनुबन्ध्यानुबन्ध भेदाच्च द्विधा । *M.Ni 1/5 (Madhukoṣa)*

1. *Anubandhya* 2. *Anubandha*

Two types of Hetu

प्रकृतिविकृतितो यथा । *M.Ni 1/5 (Madhukoṣa)*

1. *Prakṛti* 2. *Vikṛti*

Three types of Hetu

क्षयः स्थानं-च-वृद्धिश्च दोषाणां त्रिविधा गतिः ।

M.Ni 1/5 (Madhukoṣa)

1. *Kṣaya* 2. *Sthāna* 3. *Vṛddhi*

Three types of Hetu

ऊर्ध्वं चाधश्च तिर्यक् च विज्ञेया त्रिविधा परा ।

M.Ni 1/5 (Madhukoṣa)

1. *Ūrdhvaga* 2. *Adhaśca* 3. *Tiryak*

Three types of Hetu

त्रिविधा चापरा कोष्ठ शाखामर्मास्थिसन्धिषु ।

M.Ni 1/5 (Madhukoṣa)

1. *Koṣṭha*
2. *Śākha*
3. *Marmāsthi Sandhiṣu*

Āśayāpakarṣa Hetu

आशयापकर्ष हेतु ।

Two types of Hetu

एते च दोषाः सामत्वनिरामत्वाभ्यामपि ज्ञातव्याः ।

M.Ni 1/5 (Madhukoṣa)

1. *Sāma Hetu*
2. *Nirāma Hetu*

सन्निकृष्ट हेतु (Sannikṛṣṭa Hetu)

सन्निकृष्टो यथा नक्तं दिनर्तु भुक्तांशा दोष प्रकोपस्य हेतवः, न ते चयादिक मपेक्षन्ते । *M.Ni 1/5 (Madhukoṣa)*

Cause which is near for the *prakopa* of the *doṣās*. For example.

- Diurnal variation of *doṣās* takes place routinely i.e. during night, day and during digestion.
- For this *sancaya* of *doṣās* is not essential
- Manifests naturally

वयोहोरात्रि भुक्तानां तेऽन्तमध्यादिगाः क्रमात् ।

A.Hr. Ni 1/8

Aggravation of *doṣās* as per age, day, night, during digestion is common and it is a physiological process.

S.No	*Vāta*	*Pitta*	*Kapha*
Vaya	Old age	Young	Children
Aho	3 A.M. to 7 P.M.	10 A.M.-3 P.M.	6-10 A.M.
Rātri	2-6 A.M.	11-2 A.M.	7-11 P.M.
Bhuktānām	At the end of digestion	During the middle stage of digestion	During early process of digestion

किंवा सन्निकृष्टो ज्वरस्य रुक्षादि सेवा ।

M.Ni 1/5 (Madhukoṣa)

Rukṣādi bhojana and *vihāra* manifest *jvara.*

विप्रकृष्ट हेतु (Viprakṛṣṭa Hetu)

विप्रकृष्टो यथा हेमन्ते निचितः श्लेष्मा वसन्ते कफ रोग कृत् । किंवा विप्रकृष्टो रुद्रकोपः । *M.Ni 1/5 (Madhukoṣa)*

- It is the distant cause for the production of disease.
- *Sañcaya* (accumulation) of *doṣās* is very much essential.
- It is also accepted that *jvara* manifest due to wrath of god *Rudra*.
- *Caya* and *prakopa* of *doṣās* as per seasons depicted below.

S.No	Caya	Prakopa
Kapha	*Hemanta ṛtu*	*Vasanta ṛtu*
Pitta	*Varṣa ṛtu*	*Śarad ṛtu*
Vāta	*Grīṣma ṛtu*	*Varṣā ṛtu*

- Accumulated *kapha* in *hemantha ṛtu* manifests *kaphaja vikāra* in *vasanta ṛtu.*
- Accumulated *pitta* in *varṣā ṛtu* manifests *pittaja vikāra* in *śarad ṛtu.*
- Accumulated *vāta* in *gṛṣma ṛtu* manifests *vātajā vikāra* in *varṣā ṛtu.*

व्यभिचारि हेतु (Vyabhicāri Hetu)

व्यभिचारि यथा यो दुर्बलत्वाद व्याधिकरणासमर्थः ।

M.Ni 1/5 (Madhukoṣa)

Cause which is weak and unable to produce the disease but act as a carrier when favorable situation arises for the manifestation of diseases. Due to certain factors, even unwholesome food does not produce diseases immediately. All unwholesome food substances are not equally competent to produce the diseases and also all *doṣās* and bodies are capable of resisting diseases. Unwholesome food may be more harmful depending on the nature of locality, time, combination, potency and quality. When they get favorable environment then only they produces diseases. *C.Su. 28/7*

इह खलु निदान दोष दूष्य विशेषेभ्यो विकार विघातभावाभाव प्रतिविशेषा भवन्ति । यदा ह्येते त्रयो निदानादि विशेषाः परस्परं नानुबन्धन्त्यथवा काल प्रकर्षादबलीयांसोऽथवानुबध्नन्ति न तदा विकाराभिनिर्वृत्तिः, चिराद्वाऽप्यभिनिर्वर्तन्ते तनवो वा भवन्त्ययथोक्त सर्वलिङ्गावा; विपर्यये विपरीताः; इति सर्वविकार विघातभावा भाव प्रतिविशेषाभिनिर्वृत्ति हेतुर्भवत्युक्तः ॥ *C.Ni 4/4*

Certain factors decides the body immunity or manifestation of disease i.e. etiological factors, *doṣās* and *dūṣyās*. If equilibrium state of and *doṣa, nidāna, dūṣya* disturbed or when they do not support each other or when they are weak due to temporal factors, as a result disease may not manifest or there is a delay in manifestation or manifested disease is mild or symptomatology of the disease are not properly expressed.

When the etiological factors, *doṣās, dūṣyās* are favourable moderately or strongly with each other then result may be opposite i.e. manifested disease will be simple, immediately manifested or all the symptomatology of the disease might be expressed completely.

So specific factors which determines the ability or resisting capacity of the individual in the production of diseases.

प्राधानिक (Prādhānika)

प्राधानिको यथा विषादिः । *M.Ni 1/5 (Madhukoṣa)*

- It is the powerful cause which produce diseases instantaneously like poison.
- Sudden manifestation of the symptoms are seen.
- Accumulation of *doṣās* is not neccessary.
- *Āgantuja* (external causes) may be included under *prādhānika hetu.*

त्रिविध हेतु (Three fold etiological factors)

असात्म्येन्द्रियार्थ संयोग (अर्थानां) [Asātmyendriyārtha Saṁyoga (Arthānām)]

Excessive utilization or non utilization or improper utilization of sense objects is called *asātmyendriyārtha saṁyoga. C.Su. 11/37*

सोऽयमनुपशयात् पश्चाविधस्त्रिविधविकल्पो भवत्यसात्म्येन्द्रियार्थ संयोगः । *C.Su. 11/38*

The objects of sense faculties is of five types and further subdivided each into three, so totally 15 varieties of unwhole some conjunction of sense organ observed and it is the root cause for the manifestation of diseases.

चक्षुरिन्द्रिय असात्म्येन्द्रियार्थ संयोग । *(Cakṣurindriya asātmyendriyārtha saṁyoga).*

चक्षुरिन्द्रिय अतियोग (Cakṣurindriya Atiyoga)

स्तत्रातिप्रभावतां दृश्यानामतिमात्रं दर्शनमतियोगः ।

Excessive gazing at highly illuminous substance.

चक्षुरिन्द्रिय अयोग (Cakṣurindriya Ayoga)

सर्वशोऽदर्शन मयोग । *C.Su. 11/37*

Not at all seeing any objects is called non utilization of vision.

चक्षुरिन्द्रिय मिथ्यायोग (Cakṣurindriya Mithyāyoga)

अतिश्लिष्टातिविप्रकृष्ठरौद्रभैरवाद्भुतद्विष्ट ।
बीभत्सन विकृत वित्रासनादिरूप दर्शनं मिथ्यायोगः ॥
C.Su. 11/37

- Improper utilization of vision like seeing things which are too close or too faraway.
- Things which are looking terrible or awful or surprising or deformed or contemptuous or frightful or alarming etc.

श्रवणेन्द्रिय अतियोग (Śravaṇendriya Atiyoga)

तथाऽतिमात्रस्तनितपटहोत्कृष्टादीनां शब्दानामतिमात्रं श्रवणमतियोगः । *C.Su. 11/37*

Hearing uproarious noise from thunder bolt, kettle drum, loud cries etc.

श्रवणेन्द्रिय अयोग (Śravaṇendriya Ayoga)

सर्वशोऽश्रवणमयोगः । *C.Su. 11/37*

Not at all hearing is the non utilization of hearing organ.

श्रवणेन्द्रिय मिथ्यायोग (Śravaṇendriya Mithyāyoga)

परुषेष्टविनाशोपघात प्रधर्षणभीषणादि शब्द श्रवणं मिथ्यायोगः । *C.Su. 11/37*

- Hearing of harsh words
- Hearing news about death of close relatives
- Hearing, assaulting, insulting, frightful and terrifying sounds

घ्राणेन्द्रिय अतियोग (Ghrāṇendriya Atiyoga)

तथाऽतितीक्ष्णोग्राभिष्यादिनां गन्धानामतिमात्रं घ्राणमतियोगः ।
C.Su. 11/37

Excessive exposure to exceedingly sharp, intense and intoxicating odours are comes under *ghrāṇendriya atiyoga.*

घ्राणेन्द्रिय अयोग (Ghrāṇendriya Ayoga)

सर्वशोऽघ्रणमयोगः । *C.Su. 11/37*

Not at all smelling is non utilization.

घ्राणेन्द्रिय मिथ्यायोग (Ghrāṇendriya Mithyāyoga)

पूतिद्विष्टामेध्यक्लिन्नविषपवनकुणपगन्धादि घ्राणं मिथ्यायोगः ।
C.Su. 11/37

Excessive abnormal exposure to smell of exceedingly putrid, unpleasant, impure, decomposed, poisonous gas, cadaverous odour etc.

रसनेन्द्रिय अतियोग (Rasanendriya Atiyoga)

तथा रसानामत्यादानमतियोगः । *C.Su. 11/37*

Excessive consumption of various taste foods constitute over usage of gustatory sense organ :

रसनेन्द्रिय अयोग (Rasanendriya Ayoga)

सर्वशोऽनादानमयोगः । *C.Su. 11/37*

Not at all consuming foods is the non utilization of gustatory sense organs.

रसनेन्द्रिय मिथ्यायोग (Rasaendriya Mithyāyoga)

मिथ्यायोगो राशिवर्ज्यैष्वाहार विधि विशेषायतनेषूपदेक्ष्यते ॥
C.Su. 11/37

The person who doesn't follow eating rules as described under *aṣṭa vidha āhāraviśeṣāyatana* except *rāśi. (C.Vi 1/21)* is called *rasanendriya mithyāyoga.*

स्पर्शनेन्द्रिय अतियोग (Sparśanendriya Atiyoga)

तथाऽतिशीतोष्णानां स्पृश्यानां स्नानाभ्यङ्गोत्सादनादीनां चात्युपसेवनमतियोगः । *C.Su. 11/37*

Excessive exposure to cold, hot, bath, massage etc. leading to excessive utilisation of tactile sense objects.

स्पर्शनेन्द्रिय अयोग (Sparśanendriya Ayoga)

सर्वशोऽनुपसेवनमयोगः । *C.Su. 11/37*

Not at all using tactile sense objects is non utilisation.

स्पर्शनेन्द्रिय मिथ्यायोग (Sparśanendriya Mithyāyoga)

स्नानादीनां शीतोष्णादीनां च स्पृश्यानामनानुपूर्वोपसेवनं विषमस्थानभिघाताशुचि भूत संस्पर्शादयश्चेति मिथ्यायोगः ।
C.Su. 11/37

Perverted use of bath, unction, massage, cold and hot substances without following the prescribed order. For example taking cold bath followed by hot bath, immediately one should not apply unction after taking bath etc. Touching uneven surface, injury, dirty objects, micro organisms (contact with evil spirits ?).

Importance of Sparśanendriya

तत्रैकं स्पर्शनमिन्द्रियाणामिन्द्रिय व्यापकं, चेतः समवायि, स्पर्शन-व्यात्पेर्व्यापकमपि च चेतः, तस्मात् सर्वेन्द्रियाणां व्यापकस्पर्शकृतो यो भावविशेषः; सोऽनुपशयात् पञ्चविध स्त्रिविधिविकल्पो भवत्यसाम्येन्द्रियार्थसंयोगः ॥ *C.Su. 11/38*

Among five sense organs, touch alone pervades all the sense organs which is firmly associated inherently with mind and mind pervades the tactile object along with other sense organs. So the condition of all the sense organs produced by the over all tactile sensation, because of being harmful is known as unwhole some conjuction of sense organs. Each five sense organs is subdivided into three varieties based on their excessive utilisation, non utilisation and improper utilisation of sense objects is called unwholesome conjunction of sense organs. On the contrary wholesome conjuction with sense organs is called *sātmya* and develops favourable reaction in sense organs.

प्रज्ञापराध (Prajñāparādha)

Prajñāparādha means wrong utilisation of speech, body and mind. Some says even sinful acts also responsible for intellectual blasphemy.

कर्म वाङ्मनः शरीर प्रवृत्तिः ।
तत्र वाङ्मन शरीरातिप्रवृत्तिरतियोगः ॥
C.Su. 11/39

Actions related to speech, mind and body are discussed under intellectual blasphemy. Excess usage of speech, mind and physical activity constitutes over utilisation of these objects.

सर्वशोऽप्रवृत्तिरयोगः । *C.Su. 11/39*

Not at all using speech, mind and physical activities constitutes non utilisation of these objects.

शरीर मिथ्यायोग (Śarira Mithyāyoga)

वेगधारणोदीरणविषमस्खलन पतनाङ्गप्रणिधानाङ्गप्रदूषण प्रहार मर्दन प्राणोपरोध संक्लेशनादिः शरीरो मिथ्यायोगः ।
C.Su. 11/39

Improper utilisation of body activities like suppression of natural urges, forceful urges, unbalanced slipping, falling and posture; vitiation of body, fighting, pressing (excessive massage), holding breath forcefully, doing heavy physical exercises.

वाक् मिथ्यायोगः (Vāk Mithyāyoga)

सूचकानृताकालकलहप्रियाबद्धानुपचार परुष वचनादि र्वाङ्मिथ्यायोगः । *C.Su. 11/39*

Improper utilisation of speech like back biting, lying, untimely speech, quarrel, unpleasant utterance, irrelevant, unfavourable talks, harsh words.

मानस मिथ्यायोग (Mānasa Mithyāyoga)

भयशोक क्रोध लोभ मोह मानेर्ष्या मिथ्यादर्शनादिर्मानिसो मिथ्यायोगः । *C.Su. 11/39*

Improper use of mind like fear, grief, anger, greed, confusion, conceit, envy and misconceptions.

काल (Kāla)

कालः पुनः परिणाम उच्यते । *C.Su. 4/42*

Kāla is known as transforming or consequence.

शीतोष्णवर्ष लक्षणाः पुनर्हेमन्तग्रीष्मवर्षाः संवत्सरः, स कालः ।
C.Su. 11/42

Kāla is the unit of time comprises of *hemanta ṛtu*, *grīṣma ṛtu*, and *varṣā ṛtu* characterised by cold, hot and rainfall respectively.

काल अतियोग (Kāla Atiyoga)

तत्रातिमात्र स्वलक्षणः कालः कालातियोग । *C.Su. 11/42*

Excessive manifestation of characters in subsequent *ṛtu* is called *kālātiyoga*.

For example : Extreme cold in winter.

कालायोगः (Kāla Ayoga)

हीनस्वलक्षणः कालः कालायोगः *C.Su. 11/42*

Lesser manifestation or not at all manifestation of characters of subsequent *ṛtus* is called *kāla ayoga*.

For example : No rainfall in rainy season.

काल मिथ्यायोग (Kāla Mithyāyoga)

यथा स्वलक्षणविपरीतलक्षणस्तु कालः काल मिथ्यायोगः ।
C.Su. 11/42

Improper manifestation of characters in respective seasons.

For example : No rainfall in rainy season but there will be extreme winter.

इत्यसात्म्येन्द्रियार्थसंयोगः प्रज्ञापराधः परिणामश्चेति त्रयास्त्रिविधिविकल्पा हेतवो विकाराणां । *C.Su. 11/42*

Unwholesome conjuction of sense organs with their objects, intellectual blasphemy and transformation (time) are the main three etiological factors for the genesis of disorders.

Three Subtypes of Hetu

दोषव्याध्युभयहेतु भेदाच्च स त्रिविधः ।
M.Ni 1/5 (Madhukoṣa)

- *Doṣa Hetu*
- *Vyādhi Hetu*
- *Ubhaya Hetu*

दोष हेतु (Doṣa Hetu)

दोष हेतवो यथा चय प्रकोप प्रशम निमित्ता यथर्तूत्पन्ना मधुरादयः । *M.Ni 1/5 (Madhukoṣa)*

Normal accumulation, aggravation and pacification of *doṣās* takes place in respective seasons is called *doṣa hetu.*

व्याधि हेतु (Vyādhi Hetu)

व्याधिहेतवो यथा मृद्भक्षणं पाण्डुरोगस्य कारणम् ।
यद्यपि मृदपि दोषं प्रकोपयत्यव ॥
M.Ni 1/5 (Madhukoṣa)

Vyādhi hetus are those which are responsible for the development of specific disease by specific etiology. For example :

Regular consumption of *mṛd* manifest *mṛdbhakṣaṇajanya pāṇḍu roga.*

मृत्तिकादनशीलस्य कुप्यत्यन्यतमो मलः ।
कषाया मारुतं, पित्तमुषरा, मधुरा कफम् ।
C.Ci 16/27-28

Continuous intake of *mṛd* aggravates *vātādi* three *doṣās*. Depending on the dominancy of particular taste in *mṛd* produces following diseases.

Causative agent	Disease
Kaṣāya dominated *mṛd* (Astringent taste mud)	*Vāta prakopajanya mṛdbhakṣaṇajanya pāṇḍu*
Uṣara dominated *mṛd* (Alkaline saline taste mud)	*Pitta prakopajanya mṛdbhakṣaṇajanya pāṇḍu*
Madhura dominated *mṛd* (Sweet taste mud)	*Kapha prakopajanya mṛdbhakṣaṇajanya pāṇḍu*

कुलत्था आम्लपित्त जननाम् । *C.Su. 25/40*

Intake of *kulattha* (Dolichos biflorus) in excess manifest *āmlapitta vikāra.*

माषाः श्लेष्मपित्त जननाम् । *C.Su. 25/40*

Consumption of *māṣa* (Phaseolus radiatus) in excess manifest *śleṣmapitta vikāra.*

Excess intake of *kalāya* manifest *kalāya khañja vyādhi. S.Ni. 1/78*

Ubhaya Hetu

उभयहेतुर्यथा वातरक्ते । *M.Ni 1/5 (Madhukoṣa)*

Specific factors which aggravates *vāta* and *rakta* and simultaneously manifest *vātarakta vyādhi*. Here causative factors aggravates *doṣās* and simultaneously manifest diseases.

Two Types of Hetu

स एवोत्पादकव्यञ्जक भेदाच्च द्विधा ।
M.Ni 1/5 (Madhukoṣa)

1. *Utpādaka Hetu*
2. *Vyañjaka Hetu*

1. उत्पादक हेतु (Utpādaka Hetu)

तत्रोत्पादको यथा हेमन्तजो मधुर रसः कफस्य ।
M.Ni 1/5 (Madhukoṣa)

Utpādaka hetus are those which favours accumulation of respective *doṣās* in respective season due to changes in season.

For example : In *hemant ṛtu* due to *madhurādi* substances accumulation of *kapha* observed.

2. व्यञ्जक हेतु (Vyañjaka Hetu)

व्यञ्जको यथा तस्यैव कफस्य व्यञ्जको वसन्ते सूर्यसन्तापः ।
M.Ni 1/5 (Madhukoṣa)

Vyañjaka hetus are those which stimulate the development of diseases.

For example : Accumulated *kapha in hemanta* manifest disorders of *kapha* in *vasanta* due to effect of sun.

Two Types of Hetu

बाह्याभ्यन्तर भेदाच्च द्विधा । *M.Ni 1/5 (Madhukoṣa)*

1. *Bāhya Hetu*
2. *Ābhyantara Hetu*

1. बाह्य हेतु (Bāhya Hetu)

तत्र बाह्या आहाराचार कालादयः ।

M.Ni 1/5 (Madhukoṣa)

Diseases manifest due to consumption of various abnormal diet, activities, effects of season and such other internal factors which are responsible for the development of disease are called *bāhya hetu*.

Vātādi doṣa prakopaka hetu's are included under *bāhya hetu.*

2. आभ्यन्तर हेतु (Ābhyantara Hetu)

आभ्यन्तरो यथा दोषा दूष्याश्च । *M.Ni 1/5 (Madhukoṣa)*

Internal factors which disturbs the *doṣa* and *dūṣya's* are called *ābhyantara hetu.*

Two types of Hetu

तत्र, दोषोऽपि प्रकुपितः प्राकृतादिभेदादनेकधा ।

M.Ni 1/5 (Madhukoṣa)

1. *Prākṛta Hetu*
2. *Vaikṛta Hetu*

1. प्राकृत हेतु (Prakṛta Hetu)

प्राकृतो यथा वसन्ते श्लेष्मा, शरदि पित्तं, प्रावृषि वायुः ।

M.Ni 1/5 (Madhukoṣa)

Prākṛta hetu's are those which manifest naturally due to variation in seasons and accordingly aggravation of *doṣās* results.

For example : *Kapha prakopa* in *vasanta ṛtu*
Pitta prakopa in *śarad ṛtu*
Vāta prakopa in *varṣā ṛtu*

2. वैकृत हेतु (Vaikṛta Hetu)

वैकृतस्तु यथा वसन्ते पित्त वायुर्वा, वर्षासु कफ पित्तं वा, शरदि कफो वायुर्वा । *M.Ni 1/5 (Madhukoṣa)*

Vaikṛta hetu's are those which manifest due to abnormal seasons.

For example :

In *vasanta ṛtu* – *pitta* and *vāyu prakopa*
In *varṣā ṛtu* – *kapha* – *pitta prakopa*
In *śarad ṛtu* – *Kapha* – *Vāta Prakopa*

Understanding of normal and abnormal aggravation of *doṣās* as per influence of *ṛtu* is essential to understand the prognosis of disease.

Two Types of Hetu

अनुबन्ध्यानुबन्ध भेदाच्च द्विधा । *M.Ni 1/5 (Madhukoṣa)*

1. *Anubandhya Hetu* 2. *Anubandha Hetu*

1. अनुबन्ध्य हेतु (*Anubandhya Hetu*)

अनुबन्ध्यः प्रधानम । *M.Ni 1/5 (Madhukoṣa)*
It is the prime cause.

2. अनुबन्ध हेतु (*Anubandha Hetu*)

अनुबन्धोऽप्रधानम । *M.Ni 1/5 (Madhukoṣa)*
It is the secondary cause

Two Types of Hetu

प्रकृतिविकृतितो यथा । *M.Ni 1/5 (Madhukoṣa)*

1. *Prakṛti Hetu*
2. *Vikṛti Hetu*

1. प्राकृत हेतु (Prakṛta Hetu)

वातप्रकृते कफ पित्तरोगः सुखसाध्यः । (स्वयं)

Kapha and *pitta rogā's* are easily curable in *vāta prakṛti* person provided if those diseases comes under curable category.

2. वैकृत हेतु (Vaikṛta Hetu)

वात प्रकृते वातरोगः कष्टसाध्यो भवति ।

M.Ni 1/5 (Madhukoṣa)

Vāta rogā's are difficult to cure in *vātaja prakṛti* persons. *Pitta roga's* are difficult to cure in *pitta prakṛti* persons and same applies to *kapha prakṛti* person also.

Classification of Hetu according to Author

1. मिथ्या आहार (Improper Dietetics)
2. मिथ्याविहार (Abnormal Activities)
3. प्रयोगापरिशुद्धत्व (Improper Administration of Therapies)
4. आगन्तुज (Exogenous)
5. शुक्रशोणित दोषज (Defect in Sperms and Ovum)
6. कृमिज (Infective Agents)
7. अदृष्ट (Unseen Factors)
8. पराभिसंस्कार (Developed by others)

9. जनपदध्वंस (Epidemic Cause)
10. धातु क्षय (Depletion of *Dhātu's*)
11. मार्गावरण (Obstruction in normal pathway)
12. संक्रामक (Contagious)

1. मिथ्या आहार (Improper Dietetics)

अपि च । उत्क्लेश दोषान्न हरेत् द्रव्यं यत्तत्समासतः । विरुद्ध तद्धि धातूनां प्रत्यनीकतया स्थितम् । *A.S.Su 9/7*

Those substances, which cause the increase of *doṣās* but doesn't eliminate them from body is known as *viruddha* and they are not conducive to *dhātus*.

Person who doesn't follow the governing rules of dietetics is called *mithyā āhāra* except *rāsi*. i.e. *aṣṭavidha āhara viśeṣāyatana.*

विस्फोटशोफमद विद्राधिगुल्म यक्ष्म तेजोबलस्मृतिमतीन्द्रिय चित्तनाशान् । कुर्याद्विरुद्धमशनं ज्वररक्तपित्तमष्टौ गदांश्च महतो विषवच्च मृत्युम् । *A.S.Su 9/11*

For example : usage of incompatible foods will manifest boils, swelling, toxicity, abscess, tumours of abdomen, tuberculosis, loss of vigour, strength, memory, sense perceptions and intellect. It is also responsible for eight major incurable disorders and kill the person like poison.

Example :

1. Certain food substances and medicines naturally heavy for digestion, in such circumstances more food should not be consumed by the person. On the contrary light food may be taken in excess because these are easily digestable.
2. Combination of two or more substances in different proportions causes harmful effects to the body.

For example : equal quantity of *madhu* and *ghee* is harmful to the body etc.

Other than eight fold measures of dietetic rules some other things are also mentioned in relation to diet i.e. food should be warm, unctuous, proper quantity, consume food after digestion of previous meals. Eat food with concentration, not in a hurry or slow with self confidence. In almost all diseases *mithyāāhāra* is one of the major causative factor.

2. मिथ्याविहार (Abnormal Activities)

Over utilisation, under utilisation and improper utilisation of body, speech and mind is called *mithyā vihāra.* This has been described in detail under *prajñāparādha*.

For Example : *Kāsa, hikkā* and *śvāsa* manifest due to exposure to dust, smoke, wind, cold weather etc.

Sāhasajanya rājayakṣmā: Rājayakṣmā manifests in such individuals one who overlook their strength and indulge into faulty activities like weak person fighting with strong person etc.

Divāsvapna (day sleep) is one of the causative factor for *kaphaja vikāra*.

Rātri jāgaraṇa (awake at night) is one of the causative factors for *vātaja vyādhi*.

Exposure to hot substances is the causative agent for *pittaja vikāra* etc.

Under utilisation, over utilisation and improper utilisation of sense organs may also be included under this.

3. प्रयोगापरिशुद्धत्वं (Faulty administration of Therapies)

Improper administration of therapies is called *prayogā-pariśuddhatva*.

प्रयोगपरिशुद्धत्वात् यथा आमातिसारे स्तम्भनं कृतं दोषं संस्तम्भ शूलनाहाध्मानादि जनयति । *C.Ni 8/22 (Cakrapāṇi)*

For example; don't administer antidiarrhoeal drugs in *āmātisāra* otherwise it manifest diseases like accumulation of waste products in excess, pain all over abdomen, distension etc.

Administered therapy should subside the disease but should not provoke the manifestation of another disease, it is the ideal therapy, contrary to this comes under faulty administration of therapy.

Caraka described in detail in *Śiddisthāna.*

4. आगन्तुज (Exogenous)

Diseases manifest due to exogenous factors is called *āgantuja hetu*.

For example : *Āgantuja jvara, āgantuja unmāda* etc.

5. शुक्रशोणितदोषज (Defect in sperm & ovum)

Diseases born out of defective sperm and ovum are called *śukra śoṇita doṣaja hetu.*

For example : *Kuṣṭha, arśa, sahaja tṛṣṇā, klaibya.*

If *vāta prakṛti* person suffering from *vātaja vyādhi* then it is difficult to cure.

6. कृमिज (Pathogenic organisms)

These are the pathogenetic organisms act as a causative factors for various disorders.

For Example :

Raktaja kṛmi → Manifest *kuṣṭha*

Śleṣmaja kṛmi → Manifest *jvara, arocaka, Chardi, kārṣya* etc.

Puriṣaja kṛmi → Manifest *atisāra, kārśya* etc.

7. अदृष्ट हेतु (Unseen factor)

These are the agents which are not seen but definitely kill the patient.

For example : In some diseases it is very difficult to identify the cause. This may be considered as unknown etiology.

8. पराभिसंस्कार (Concieved by others)

These are the causative agents conceived by others.

For example : Facing lot of problems by colleagues, friends, family members etc. inspite of leading normal life.

The etiological factors may be in the form of physical stress, mental stress and emotional stress by others.

9. जनपदध्वंस (Epidemics)

There are certain factors which are common to all individuals i.e. air, water, location and seasons and vitiation of these manifest disease to all the inhabitants of the region is called *Janapada-dhvaṁsa.*

For example : *Atisāra, śvāsa* etc.

10. धातुक्षय हेतु (Diminution of tissues)

Factors which bring about depletion of *dhātu* are called *dhātukṣaya hetu.*

For example : It is said to be one of the prime etiological factors for *vāta prakopa* and *vāta* is considered to be one of the important factor for the maintenance of health in its normalcy and act as a causative agent for almost all diseases when it becomes agitated.

For example : *Vāta vyādhi, rājayakṣmā, kṣayaja kāsa* etc.

11. मार्गावरण हेतु (Obstruction for normal path)

Normal movement of wind, air, food, water, *doṣās,* tissues, waste products etc. takes place in healthy channels. Any blockade in the channels resulting into impairment in the movement of wind, air, water, *doṣās,* tissues etc. resulting into development of various disorders. It is also said to be one of the prime factor for *vāta prakopa.*

12. संक्रामक हेतु (Contagious Causes)

These are the agents responsible for spreading of diseases by following causes.

- Touching the infected patient.
- Inhaling the air of afflicted patient.
- Eating together, sleeping together and sitting together with affected person.
- Using dress, garlands and unguents of the afflicted patient by healthy individuals.

For example : *Kuṣṭha, Kṛmi. Śoṣa* etc.

Diagnostic Importance of Hetu

Hetu gives idea about the existing disease and it also gives an idea about the unmanifested disease. Each disease has its own *hetu.* For example :

Eating mud causes *pāṇḍu roga* (i.e. *mṛdbhakṣaṇajanya pāṇḍu roga*)

Therapeutic Importance of Hetu

Hetu is the prime factor for the causation of disease. That's why both *Caraka* and *Suśruta* mentioned to avoid the etiological factor and it is the primary step in the management of any diseases.

> संक्षेपतः क्रियायोगो निदानस्य परिवर्जनम् ।
>
> *S.Utt. 1/25*

Avoid the causative factors, which are responsible for causation of disease and it is the primary step to prevent further pathogenesis.

अनन्तरं निदानोक्तानां भावानामनुपसेवनमिति।

C.Vi 7/14

Avoid the etiological factors for smooth recovery of any diseases.

Prognostic Importance of Hetu

Powerful *hetu* signifies difficult to cure or incurable one.

Mild *hetu* indicates disease become curable without difficulty. So, *hetu* gives idea about the prognosis of disease.

अग्नि का भेद (Agni Behda)

अग्नि का महत्व (Importance of Agni)

अन्नस्य पक्ता सर्वेषां पक्तृणामधिपोमतः।
तन्मूलास्ते हि तद्वृद्धिक्षयवृद्धिक्षयात्मकाः।
तस्मात्तं विधिवधुक्तैरन्नपानेन्धनैर्हितैः।
पालयेत् प्रयतस्तस्य स्थितौ ह्यायुर्बलस्थितिः।
यो हि भुक्ते विधिं त्यक्त्वा ग्रहणीदोषजान् गदान्।
स लौल्याल्लभते शीघ्रं, वक्ष्यन्तेऽन्तः परं तु ते।

C. Ci 15/38-41

Functions of various *agni* elaborately discussed above. *Jaṭharāgni* is the chief among all types of *agnis* because functions of *bhūtāgni* and *dhātvāgni* depends on this. Aggravation or diminution of *jaṭharāgni* results in aggravation or diminution of *bhūtāgni* and *dhātvāgni*. Therefore by all means one has to protect *jaṭhārāgni* by consuming suitable wholesome dietetics and behaviour because longevity and strength depends on normal state of *agni*. On the contrary one who consumes unwholesome diet due to greed, succumbs to disease caused by the vitiation of *grahaṇī*.

Grahaṇī doṣa refers to diseases located in *grahaṇī*. This specific term refers to 4 types of *grahaṇī roga*. This also includes *agnimāndhya*, *ajīrṇa* etc. which are manifest due to vitiation of *grahaṇī*. The term '*grahaṇī*' as a disease entity specifically used for the ailment *grahaṇī gada*, which manifest due to malfunctioning of the *grahaṇī*.

विषमो धातुवैषम्यं करोति विषमं पचन्।
तीक्ष्णो मन्देन्धनो धातून् विशोषयति पावकः।

C. Ci 15/50

Irregular digestion and metabolism causes imbalance in *dhātus*. The intense digestion and metabolism and less consumption of food leads to depletion of *dhātus*.

ते चावकाशाः प्रकुपिताः स्थान स्थान्मार्गस्थांश्च धातूनप्रकोपयन्ति तेऽपि तान् स्रोतांसि च। स्रोतांसि धातवश्च धातुन तेषां सर्वेषामेवदूषयितारो दुष्टा दोषाः ते च प्रायशो दूष्यन्त्यग्नि दोषात्। *A.S.Śā 6/32*

Once the empty spaces (*srotas*) become abnormal, it brings abnormality in normal *dhātu* by not transforting to required destination, this is because of the abnormality in *srotas*. *Srotas* vitiates other *srotas*, *dhātus vitiates* other *dhātus*, for all these happenings disturbed *doṣās* are responsible. *Doṣās* get aggravated by the disturbed functions of *agni*. That's why life span, health, strength and nourishment etc. are depends on *agni*.

आयुर्वर्णो बलं स्वास्थ्यमुत्साहोपचयौ प्रभा।
ओजस्तेजोऽग्नयः प्राणाश्चोक्ता देहाग्निहेतुकाः।
शान्तेऽग्नौ म्रियते, युक्ते चिरं जीवत्यनामयः।
रोगि स्याद्विकृते, मूलमग्निस्तस्मान्निरुच्यते।

C.Ci 15/3-4

Jaṭharāgni is the main principle substance responsible for disease and health. During its normalcy it is responsible for longevity, complextion, strength, health, enthusiasm, well built, lustre, immunity (*ojas*), temperature, other *agni's* (*bhūtāgni* and *dhātvāgni*) and other vital functions all are dependent on *jaṭharāgni*. Healthy state of body and diseased condition is entirely dependent on *agni*.

यदन्नं देहधात्वोजोबलवर्णादिपोषकम्।
तत्राग्निर्हेतुराहारान्न ह्यपक्वाद्रसादयः।

C. Ci 15/5

Food nourishes body *dhātus, ojas,* strength, complexion etc. it all depends on equilibrium state of *agni* otherwise *rasa* etc. cannot be produced or manufactured from undigested food.

Importance of Agni in context to Arśa, Atisara & Grahaṇī Doṣa

त्रयो विकाराः प्रायेण ये परस्परहेतवः।
अर्शांसि चातिसारश्च ग्रहणीदोष एव च॥

एषामग्निबले हीने वृद्धिर्वृद्धे परिक्षयः।
तस्मादग्निबलं रक्ष्यमेषु त्रिषु विशेषतः ॥

C. Ci 14/244-245

The three diseases viz. piles, diarrhoea and *Grahaṇī* (sprue syndrome) are interdependent in as much as one of them can cause the other. They get aggravated if there is reduction in the power of digestion and when the power of digestion is increased, they get cured. Therefore, agni should be specifically protected for these three ailments.

रोगाः सर्वेऽपि मन्देऽग्नौ सुतरामुदराणि तु।

A.S. Ni. 12/1

Almost all diseases arises due to sluggish functions of *Agni* specially *Udara roga.*

अग्नि का निदान (Agni Nidāna)

Causes of Agni duṣṭi

अत्यम्बुपानाद्विषमाशनाच्च सन्धारणात् स्वप्नविपर्ययाच्च।
कालेऽपि सात्म्यं लघु चापि भुक्तमन्नं न पाकं भजते नरस्य ॥

B.P.M.U. 6/11

शुष्कं विरुद्धं विष्टम्भि वह्निव्यापदमावहेत् ॥

S.S.Su. 46/505

अत्यम्बुपानाद्विषमाशनाद्वा सन्धारणात् स्वप्नविपर्ययाच्च।
कालेऽपि सात्म्यं लघु चापि भुक्तमन्नं ना पाकं भजते नरस्य ॥
ईर्ष्याभयक्रोधपरिक्षतेन लुब्धेन रुग्दैन्यनिपीडितेन।
प्रद्वेषयुक्तेन च सेव्यमानमन्नं न सम्यक् परिणाममेति ॥

S.S.Su. 46/507-508

The following causative factors brings abnormality in the *agni* :

1. Drinking more quantity of water
2. Consuming food in improper manner
3. Suppression of the natural the urges
4. Irregular sleep pattern and such other activities

In such situations the food though habituated, eaten at proper times and easily digestible does not undergo proper digestion.

Other factors which causes *agniduṣṭi*

- The dried food
- The incompatible food
- Food that causing *Viṣṭambha*

The following psychological causative factors brings abnormality in the *agni* :

- Individual afflicted by envy, fear, anger, greed, sorrow, agony and hate, the food will not digest properly

विपमो वातजान् रोगांस्तीक्ष्णः पित्तनिमित्तजान्।
करोत्यग्निस्तथा मन्दो विकारान् कफसंभवान् ॥

S.S. Su 35/25

- *Viṣamāgni* state gives rise to diseases due to *vāta doṣa.*
- *Tīkṣṇāgni* state gives rise to diseases due to *pitta doṣa.*
- *Mandāgni* state gives rise to diseases due to *kaphadoṣa.*

जाठरो भगवानग्रिरीश्वरोऽन्नस्य पाचकः।
सौक्ष्म्याद्रसानाददानो विवेक्तुं नैव शक्यते ॥
प्राणापानसमानैस्तु सर्वतः पवनैस्त्रिभिः।
ध्मायते पाल्यते चापि स्वां स्वां गतिमवस्थितैः ॥

S.Su. 35/27-28

Agni (fire) present in the *jaṭhara* (stomach) which digests the food is *Bhagavān īśwara*-almighty god- himself; he receives (substances of) sweet and other tastes (for growth and maintenance of the body), he being subtle (minute) it is not possible to perceive him. Served by *prāṇa, apāna* and *samāna* (the three divisions of *vāta*), by blowing/increasing, protecting and preserving it. It stimulates other agni to carry out their respective functions.

तीक्ष्णः पित्तसमुत्थानानिव्षमो वातहेतुकान्।
तथा करोति मन्दाग्निविकारान् कफसम्भवान् ॥

B.P.M.U. 6/8

Tīkṣnāgni gives rise to diseases of *pitta* origin, *viṣamāgni* to diseases of *vāta* origin and maiidagni to diseases of *kapha* origin.

अग्निसाम्यता एवं अग्नि दुष्टि लक्षण (Agnisāmyatā Evam Agni Duṣṭi Lakṣaṇa)

प्रागभिहितोऽग्निरन्नस्य पाचकः। स चतुर्विधो भवति-दोषानभिपन्न एकः; विक्रियामापन्नस्त्रिविधो भवतिविषमो वातेन, तीक्ष्णः पित्तेन, मन्दः श्लेष्मणा, चतुर्थः समः सर्वसाम्यादिति।

S.S. Su 35/24

Pācakāgni is stated to be responsible for digestion and metabolism. It is of four kinds based on the involvement of *doṣās*.

i) First variety is not associated with *doṣās* and it is called *samāgni* state and it is the physiological state of *Agni*. Remaining three varieties of *Agni* are the pathological ones and which are responsible for improper functions.

ii) *Viṣamāgni* state due to *vāta*.

iii) *Tikṣṇāgni* state due to *pitta*.

iv) *Mandāgni* state due to *kapha*.

Agnibheda-kinds of digestive fire

कफपित्तातिलाधिक्यात्तत्साम्याज्जाङ्गरोऽनलः ।
मन्दस्तीक्ष्णोऽथ विषमः समश्चेति चतुर्विधः ॥
B.P.M.U. 6/1

Depending on the influence of various states of *doṣās* the *jaṭharāgni* (digestive fire) is classified into 4 varieties namely mañdāgni, *tīkṣnāgni, viṣamāgni,* one each from predominance of *kapha, pitta* and *vāta* respectively and (the fourth) *samāgni* from the homeostasis of all the *doṣās*.

समाग्नि (Samāgni)

Samāgni state of *Agni* is the condition in which *doṣās* are in equilibrium state and performs normal digestion and metabolism functions.

तत्र, यो यथाकालमुपयुक्तमन्नं सम्यक् पचति स समः समैर्दोषैः ।
S.S. Su 35/24

उद्गारशुद्धिरुत्साहो वेगोत्सर्गो यथोचित; ।
लघुता क्षुत्पिपासा च जीर्णाहारस्य लक्षणम् ॥
M.Ni 6/24

It is characterized by :

1. यथाकालमुपयुक्तमन्नं सम्यक् पचति - Digestion of food within stipulated period of time, if person consume normal quantity of food
2. उद्गारशुद्धि - Belching which is free from morbidities
3. उत्साह - Enthusiastic to do all activities
4. वेगोत्सर्गो यथोचित - Proper elimination of natural urges without any difficulties
5. लघुता - Feeling of lightness all over the body
6. क्षुत्पिपासा - Timely hunger and thirst

समा समाग्रेरशिता मात्रा सम्यग्विपच्यते ।
एषां मध्ये तु सर्वेषां समाग्निः श्रेष्ठ उच्यते ॥
B.P.M.U. 6/6

Samāgni (normal digestive fire) person digests the normal quantity of food properly without any difficulty in a stipulated period of time and it is the best among all the kinds of *agni* and hence it is termed as ideal.

विषमाग्नि (Viṣamāgni)

Viṣamāgni is the state in which improper digestion and metabolism takes place due to irregular function of *agni*.

यः कदाचित् सम्यक् पचति, कदाचिदाध्मानशूलोदावर्तातिसारजठरगौरवान्त्रकूजनप्रवाहणानि कृत्वा स विषमः । *S.S. Su 35/24*

1. कदाचित् सम्यक् पचति - Some times *agni* performs normal functions
2. आध्मान - Flatulence
3. शूल - Abdominal pain
4. उदावर्त - Upward movement of *vāta* inside the *koṣtha*
5. अतिसार - Diarrhoea
6. जठरगौरव - Heaviness in abdomen
7. आन्त्रकूजन - Intestinal gurgling
8. प्रवाहणानि - Straining excercise for evacuation of stools.

अशिता खलु मात्राऽपि विषमाग्नेस्तु देहिनः ।
कदाचित्पच्यते सम्यक् कदाचिन्न विपच्यते ॥
तस्याध्मानमुदावर्त्त शूलं जङ्गरगौरवम् ।
प्रवाहणमतीसारस्तथा स्यादन्त्रकूजनम् ॥
B.P.M.U. 6/4-5

Viṣamāgni (erratic, indefinite) person digests the normal quantity of food sometimes properly and sometimes it does not digest the food properly associated with flatulence, upward movement inside the abdomen, pain in the abdomen, heaviness, straining during evacuation of stools, diarrhoea and intestinal gurgling.

तीक्ष्णाग्नि *(Tīkṣṇāgni)*

Tīkṣṇāgni is the state in which hyper functioning of digestion & metabolic activities observed.

यः प्रभूतमप्युपयुक्तमन्नमाशु पचति स तीक्ष्णः ।
S.S. Su 35/24

1. प्रभूतमप्युपयुक्तमन्नमाशु पचति - Quick digestion of food even after taking more quantity of food.

मात्रातिमात्राऽप्यशिता तीक्ष्णाग्नेः पच्यते सुखम् ।
अतएव हि केनापि मतस्तीक्ष्णाग्निरुत्तमः ॥
B.P.M.U. 6/3

Tīkṣnāgni (powerful digestive fire) person digests more quantity of food easily and early; hence some opines that it is the best variety of agni.

अतिमात्रमजीर्णेऽपि गुरु चान्नं समश्नतः ।
दिवाऽपि स्वपतो येन पच्यते सोऽग्निरुत्तमः ॥
B.P.M.U. 6/7

Some other texts say- That kind of *agni* (digestive fire) which will digest the food tough more in quantity, hard for digestion and even when the person sleeps during day after taking food-such a *agni* is the best.

अत्याग्नि (Atyāgni)

स एवाभिवर्धमानोऽत्यग्निरित्याभाष्यते, स मुहुर्मुहुः प्रभूतमप्युपयुक्तमन्नमाशुतरं पचाति, पाकान्तो च गलताल्वोष्ठशोषदाहसंतापाञ्जनयति; । *S.S. Su 35/24*

1. एवाभिवर्धमानोऽत्यग्निरित्याभाष्यते - The *tikṣṇāgni* if increases greatly is called *atyāgni.*
2. स मुहुर्मुहुः प्रभूत-मप्युपयुक्तमन्नमाशुतरं पचति - Quicker digestion of food even after taking more quantity of food oftenly.
3. पाकान्ते च गलताल्वोष्ठशोषदाहसंतापाञ्जनयति - At the end of digestion it produces dryness, burning sensation and warmthness in the throat, palate and lips, .

नरे क्षीणकफे पित्तं कुपितं मारुतानुगम् ॥
स्वोष्मणा पावकस्थाने बलमग्नेः प्रयच्छति ।
तदा लब्धबलो देहे विरुक्षे सानिलोऽनलः ॥
परिभूय पचत्यन्नं तैक्ष्ण्यादाशु मुहुर्मुहुः ।
पक्त्वाऽन्नं स ततो धातूच्छोणितादीन् पचत्यपि ॥
ततो दौर्बल्यमातङ्कान्मृत्युं चोपनयेन्नरम् ।
भुक्तेऽन्ने लभते शान्तिं जीर्णमात्रे प्रताम्यति ॥
तृट्श्वासदाहमूर्च्छाद्या व्याधयोऽत्यग्निसंभवाः ।
तमत्यग्निं गुरुस्निग्धशीतैर्मधुरविज्जलैः ॥
C.S.Ci. 15/217-221

1. क्षीणकफे - Diminished state of *Kapha*
2. पित्तं कुपितं मारुतानुगम् स्वोष्मणा पावकस्थाने बलमग्नेः प्रयच्छति - *Pitta* along with *Vāta* strengthens the *Agni* in its own place i.e. *Grahaṇī* by its intrinsic heat.
3. तदा लब्धबलो देहे विरुक्षे सानिलोऽनलः । परिभूय पचत्यन्नं तैक्ष्ण्यादाशु मुहुर्मुहु - *Agni* become intensely powerful and immediately digest the frequently consumed food.
3. पक्त्वाऽन्नं स ततो धातूञ्छोणितादीन् पचत्यपि - After the digestion of food, it starts digesting the tissue elements like *Rakta* etc.
4. दौर्बल्य - Debility
5. आतङ्क - Suffers from many disorders
6. मृत्यु - Death
7. भुक्तेऽन्ने लभते शान्तिं जीर्णमात्रे प्रताम्यति - Feels comfort after taking food but soon become restless after it is digested.
8. The following conditions develop due to *Atyāgni.*

   तृट् - Thirst
   श्वास - Breathing
   दाह - Burning sensation
   मूर्च्छा - Fainting

Bhasmaka-powerful digestive fire

बह्वर्त्तिरूक्षान्नभुजां नराणां क्षीणे कफे मारुतपित्तवृद्धौ ।
अतिप्रवृद्धः पवनान्वितोऽग्निर्भुक्तं क्षणाद्भस्म करोति यस्मात् ।
तस्मादसौ भस्मकसंज्ञकोऽभूदुपेक्षितोऽयं पचते च धातून् ॥
तृट्स्वेददाहमूर्च्छादीन्कृत्वैषोऽत्यग्निसम्भवान् ।
पक्त्वाऽन्नमाशु धात्वादीन् स क्षिप्रं नाशयेद् धुवम् ॥
B.P.M.U. 6/9-10

In persons who are suffering from painful disorders and those who consume very dry foods, *kapha* becomes decreased followed by excessive exacerbation of *vāta* and *pitta* leading to further increase of *agni* (digestive fire) and this powerful state of agni digests the food within few hours and it converts into *bhasma* (ash). Hence this condition is known as *Bhasmaka*, hence it should not be neglected otherwise it destroys and burns the *dhātus* (tissues) associated with thirst, perspiration, feeling of burning sensation, fainting, and other symptoms of increased activity of digestive fire, it destroys the tissues quickly and lastly death.

Note– *Agni* is the heating attribute of *Pitta*. Always there is close association exists between *Agni* and *Pitta* i.e. *Agni* is the substance which originates (*Janya*) and *Pitta* is the source of origin *(Janaka)*. Due to this difference between the *Janaka* and the *Janya* the aggravated *Pitta* might even reduce the *Agni*. It is only is association with *Vāta, Pitta* becomes powerful and manifest *Atyāgni*.

मन्दाग्नि *(Mandāgni)*

Mandāgni is the state in which digestion process become weak and takes long time to digest the less quantity of food.

यस्त्वल्पमप्युपयुक्तमुदरशिरोगौरवकासश्वासप्रसेकच्छर्दिगात्रसदनानि कृत्वा महता कालेन पचति, स मन्दः । *S.S. Su 35/24*

1. यस्त्वल्पमप्युपयुक्त महता कालेन पचति - Slower digestion of food even after taking less quantity of food.
2. उदरगौरव - Heaviness in abdomen

   शिरोगौरव - Heaviness in head

   कास - Cough

   श्वास - Dyspnoea

   प्रसेक - Excessive salivation

   छर्दि - Vomiting

   गात्रसदन - Weakness of the body

स्वल्पाऽपि नैव मन्दाग्नेर्मात्रा भुक्ता विपच्यते ।
छर्दिः सादः प्रसेकः स्याच्छिरोजङ्गरगौरवम् ॥

B.P.M.U. 6/2

Mandāgni A (weak digestive fire) person does not digest even small quantities of food properly associated with vomiting, debility, excessive salivation and heaviness of the head and the abdomen.

Validated Questionnaire for assessment of Agni developed by Dr. P.S. Byadgi and Dr. Neera Saini

1. Cronbach's alpha reliability of the selected questions after item analysis (*Samāgni*)

S. N.	Items	Yes	N0
1.	Do you eat food timely and whether it gets digested within stipulated time		
2.	Whether eructations are pure/free from bad odour		
3.	Do you feel enthusiasm to perform daily activities		
4.	Do you pass urine and stool regularly		
5.	Do you feel lightness in body		
6.	Do you get hunger normally and timely		
7.	Do you get thirst normally and timely		

2. Cronbach's alpha reliability of the selected questions after item analysis (*Viṣamāgni*)

S.N.	Items	Yes	N0
1.	Have you any complaints of sometimes digestive power works properly sometimes may not		
2.	Do you feel flatulence		
3.	Have you complaints of pain in abdomen		
4.	Have you complaint of upward movement of *Vāta* in *Koṣṭha*		
5.	Are you suffering from diarrhoea		
6.	Have you complaint of heaviness in abdomen		
7.	Do you feel gurgling noise in abdomen		
8.	Do you feel like straining during defecation		

3. Cronbach's alpha reliability of the selected questions after item analysis (*Mandāgni*)

S.N.	Items	Yes	NO
1.	Do you feel that comparatively you eat less amount of food		
2.	Do you feel that your digestion is weak		
3.	Do you feel that small amount of food also digests after long time		
4.	Do you have complaint of heaviness in abdomen		
5.	Do you have complaint of heaviness in head		
6.	Do you feel excessive gurgling noise in abdomen		
7.	Have you complaints of flatulence		
8.	Are you suffering from cough		
9.	Do you feel breathlessness		
10.	Have you complaints of excess salivation		
11.	Are you suffering from vomiting or nausea		
12.	Do you feel dryness of mouth		
13.	Do you feel excessive weakness		
14.	Have you complaints of constipation		

The maximum number of points possible is 7. A classification of definitive *Samāgni* requires a score of 4/7 or higher.

The maximum number of points possible is 8. A classification of definitive *Viṣamāgni* requires a score of 5/8 or higher.

The maximum number of point possible is 1. A classification of definitive *Tikṣṅāgni* requires a score of 1/1.

The maximum number of points possible is 14. A classification of definitive *Mandāgni* requires a score of 8/14.

The maximum number of points possible is 4. A classification of definitive *Atyāgni* requires a score of 3/4.

वात पित्त कफ दुष्ट निदान एवं कर्म (Vāta Pitta Kapha Duṣṭa Nidāna Evam Karma)

वात दोष प्रकोप हेतु *(Vāta Doṣa Prakopa hetu)*

Doṣa Sañcaya Hetu

तत्र दोषमेकैकं त्रयस्त्रयो रसाञ्जनयन्ति त्रय स्त्रयश्चयोपशमयन्ति ॥ *C.Vi 1/6*

3 *Rasās* accumulates the *doṣās* and 3 *Rasās* *(Madhura, āmla & lavaṇa)* subsides the *doṣa* they are as follows–

Vāta Sañcaya Hetu

कटुतिक्तकषाया वातं जनयन्ति । *C.Vi. 1/6*

Pungent, bitter and astringent taste of food accumulates *vāta.*

तत्र बलवद्विग्रहातिव्यायामव्यवायाध्ययनप्रपतनप्रधावनप्रपीडनाभिधातलङ्घनप्लवनतरणरात्रिजागरणभारहरणगजतुरङ्गरथपदाति चर्य्याकटुकषायतिक्तरूक्षलघुशीतवीर्य्यशुष्कशाकवल्लूरवरकोद्दालककोरदूषश्यामाकनीवारमुद्गमसूराढकीहरेणुकलायनिष्पावानशनविषमाशनाध्यशनवातमूत्रपुरीषशुक्रच्छर्दिक्षवथूद्गारवाष्पवेगविघातादिभिर्विशेषैर्वायुः प्रकोपमापद्यते ॥

S.Su 21/19

Vāta become agitated by following causative factors :

- Weak person fighting with strong person or indulging in मल्लादिभिः सद्धबाहु युद्धादिः ।
- Performing heavy exercises, indulging in more sexual acts, continuous study.
- Falling down from certain height.
- Running or speed walk.
- Excessive Strain/Sprain to the body.
- अभिघात लगुडादि प्रहारः ।
  Injury due to fighting
- लङ्घनं रवेण गर्ताद्युत्क्रमणम् ।
  Jumping to a downward deep surface is called *lañgana.*
- Sinking in water (hopping)
- Swimming in water
- Not sleeping during night time.

- Carrying heavy loads
- Excessive travelling on elephant, horse, chariot and by foot.
- Increased intake of pungent, astringent, bitter, rough, light, cold, dried vegetables.
- वल्लूरं शुष्क मांसम् (Vallur means dry meat)
- वरकः वरादिका कुधान्यविशेषः ।
  Varaka is kind of bilobed cereals.
- उद्दालक अरण्य कोद्रवः (*Uddālaka* is *araṇya kodrava*).
- *Syāmāka*
- निवारः प्रसातिका, धान्यमध्ये रक्तशूको भवति ।
- Green gram
- Lentil
- आढकी–तुवरी– *Aḍaki* means *tuvari*
- हरेणु–वर्तुल कलाय– Harenu is *vartula kalāya*
- कलायः त्रिपुटकः– *Kalāya is tṛpuṭaka*
- निष्पावक–राजशिम्बिः– *Niṣpāvaka* is *rājaśimbi*
- अनशनम् अल्प भोजनमुपवासश्च । *(Dalhāṇa)*
  Anaśana means less intake of food and fasting.
- विषमाशनं बहवाल्पाकाल भोजनम् । *(Dalhāṇa)*
  Viṣamāsana means intake of large amount of food or less amount of food in irregular time.
- अध्यशनं सजीर्ण भोजनम् । *(Dalhāṇa)*
  Adhyaśana means eating during indigestion.
- Suppression of urges like flatus, urine, stool, semen, vomiting, sneezing, eructation, lachrymation etc.

By above *nidāna vāta* become agitated.

स शीताभ्रप्रवातेषु घर्मान्ते च विशेषतः ।
प्रत्युषस्यपराह्ने च जीर्णेऽन्ने च प्रकुप्यति ।
S.Su 21/20

- *Vāyu* aggravates during cold season and exposure to cold.
- अभ्रे मेघोपलक्षित काले प्रवाते प्रकृष्ठ वाते काले– During cloudy weather, forceful wind.
- घर्मान्ते वर्षाकाले– During rainy season
- During early morning, afternoon and after the digestion of food.

वात दुष्टि लक्षण (Vāta duṣṭi Lakṣaṇa)

कुपितस्तु खलु शरीरे शरीरं नाना विधैर्विकारैरूपतपति बलवर्ण सुखायुषामुपघाताय, मनोव्याहर्षयति, सर्वेन्द्रियाण्युपहन्ति, विनिहन्ति गर्भान् विकृतिमापादयत्यतिकालं वा धारयति, भय शोकमोह दैन्याति प्रलापाञ्जनयति, प्राणांश्चोपरूणद्धि। *C. Su. 12/8*

Abnormal *vāta* performs various afflictions to the body, there by it produces various diseases. It also affects the strength, complexion, happiness and longevity. It disturbs the functions of mind, afflicts all sense faculties, deforms and destroy the embryo for long. As a result it gives rise to fear, grief, confusion, anxiety and excessive delirium and finally stops the vital breath.

वातज नानात्मज विकार (Vātaja Nānātmaja Vikāra)

वातज नानात्मज विकार (80 types of *vātaja nānātmaja vikāra)*

पित्त दोष प्रकोप हेतु (Pitta Doṣa Prakopa hetu)

क्रोधशोकभयायासोपवासविदग्धमैथुनोपगमनकट्वम्ललवणातीक्ष्णोष्णलघुविदाहितिलतैलपिण्याककुलत्थसर्षपातसीहरितकशाकगोधामत्स्याजाविकमांसदधितक्रकूर्चिकामस्तुसौवीरकसुराविकाराम्लफलकट्वरप्रभृतिभिः पित्तं प्रकोपमापद्यते ॥।
S.Śu 21/21

Pitta aggravates due to the following etiological factors.

- Anger, Anxiety, Fear

आयासः शरीरपीडा *(Dalhaṇa)*— *Āyāsa means* various kinds of pain and discomfort to the body.

विदग्धं विदाहः, स च शोथरागाहारादि कृतः । *(Dalhāṇa)*

Vidagdha means burning sensation, which manifests swelling, redness etc.

विदाहिति यदम्लोद्गार दाह तृष्णा प्रभूतीनुदीर्य कृच्छ्रात् पाकमुपगच्छति तद्विदाहि *(Dalhāṇa)*

Vidāha means sour eructations, burning sensation, thirst along with difficulty in digestion.

Sexual intercourse.

Excess consumption of pungent, sour, salty, irritant, hot, light and burning food substances.

Excess in take of sesamum oil, oil cake, horse gram, mustard, linseeds.

हरितशाकमिति कुठेरशिग्रुसुरस सुसुखासुरि भूस्तृणाः । *(Dalhāṇa)*

Green vegetables like *kuṭhera, śigru, surasa, sumukha, āsuri, bhūstṛṇa* etc.

Increased intake of pot herbs, fish, meat of goat, sheep.

दधि सस्नेहं गव्यं दधि । *(Dalhāṇa)*

Cow's curd with fat.

Butter milk.

कूर्चिका विग्रथितं तक्रम् । *(Dalhāṇa) kūrchika means* properly churned butter milk.

मस्तु दधिमस्तु– *Mastu* means curd water.

सौविरक– निस्तुषयवत्रिवृदादिकृतं संधानं धान्याम्लं वा । *(Dalhāṇa)*

Sauviraka means fermented substance forms after mixing *nistuṣa, yava, tṛvṛta.* Various wine preparations.

आम्लफलानि आम्रातकादिनि । *(Dalhāṇa)*

Sour fruits like *āmrātaka* etc.

कट्वरमिति अस्नेह दधी । *(Dalhāṇa)*

Fatless curd.

Pitta Aggravating Factors

तदुष्णैरुष्ण काले च घनान्ते च विशेषतः ।
मध्याह्ने चार्धरात्रे च जीर्यत्यन्ने च कुप्यति ।
S.Śu 21/22

उष्णैरिति उष्णात्वमत्र घर्मादिकृतम् । *(Dalhāṇa)*

Uṣṇa means working in heat zones.

During Summer *(grīṣma ṛtu)*

घनान्ते शरदि– During *śarad ṛtu* (Autumn season) *(Dalhāṇa)*

Afternoon

Midnight

During digestion of food.

Pitta Sañcaya Hetu

कटु आम्ल लवणाः पित्तं जनयन्ति । *C.Vi. 1/6*

Pungent, sour and salty taste dominated food accumulates *pitta.*

During *varṣā ṛtu*

पित्त दुष्टि लक्षण (Pitta Duṣṭi Lakṣaṇa)

अग्निरेव शरीरे पित्तान्तर्गतः कुपिताकुपितः शुभाशुभानि करोति; तद्यथा–पक्तिमपक्तिं दर्शनमदर्शनं मात्रामात्रत्वमूष्मणः प्रकृतिविकृतिवर्णौ शौर्यं भयं क्रोधं हर्षं मोहं प्रसादमित्येवमादीनि चापराणि द्वन्द्वानीति ॥ *C. Su. 12/11*

Āgni is represented by *pitta* in the body and produces good or bad effects depending on its normal or abnormal state, i.e. digestion or indigestion, vision or loss of vision, normal or abnormal temperature, normal or abnormal complexion, valour and fear, anger and joy, confusion and clarity and other dual functions.

पित्तज नानात्मज विकार *(Pittaja nānātmaja vikāra)*

पित्तज नानात्मज विकार (40 types of *Pittaja nānātmaja vikāra)*

कफ दोष प्रकोप हेतु *(Kapha Doṣa Prakopa hetu)*

दिवास्वप्नाव्यायामालस्यमधुराम्ल लवण शीत स्निग्ध गुरु पिच्छिलाभिष्यन्दि हायनक यवक नैष धेत्कट माष महामाष गोधूम-तिल-पिष्ट विकृति दधी दुग्ध कृशरा पायसेक्षुविकारानूपौदकमांस वसाबिस मृणालकसेरुक शृङ्गाटक मधुर वल्ली फल समशनाध्यशन प्रभृतिभिः श्लेष्मा प्रकोपमापद्यते ॥ *S.Śu 21/23*

***Kapha* aggravating etiological factors are as follows–**

- Sleeping during day time
- Sitting idle or not doing any physical exercises
- Lassitude
- Excess consumption of sweet, sour, salt, cold, unctous, heavy, shiny food.

अभिष्यन्दि दोष धातु मल स्रोतसामतिशय क्लेद प्राप्ति जननम् । *(Dalhāṇa)*

Abhiṣyandi means which increase *kledata* (moistureness) in *doṣa, dhātu, Mala* and *Srotas.*

Excess intake of *āyanaka, yavaka, naiṣadha, itkaṭa, māṣa, mahāmāṣa, godhuma, tila, piṣṭa vikṛti, dadhi, dugdha, kṛśara* (kind of *yavāgu*), *pāyasa, ikṣuvikāra* (sugarcane and its products).

- Consumption of marshy and aquatic animals meat.
- Intake of lotus i.e. its fat, stem and stalk, *kaseruka, sṛñgāṭaka.*
- Excess consumption of sweet fruits like *tāla, nārikela* etc.

- Consumption of cucurbitaceous fruits like *kūṣmaṇḍa* etc.
- Intake of mixture of healthy and unhealthy diet.
- Eating during indigestion and other *kapha* aggravating factors.

स शीतैः शीतकाले च बसन्ते च विशेषतः।
पूर्वाह्ने च प्रदोषे च भुक्तमात्रे प्रकुप्यति।
S.Su 21/25

Excess intake of cold substances, during winter, especially in vasaṁta, first hours of morning, (पूर्वाह्ने प्रथम प्रहरे), night and just after taking food.

कफ सञ्चय हेतु (Kapha Sañcaya Hetu)

मधुर आम्ल लवणाः श्लेष्माणं जनयन्ति। *C.Vi. 1/6*

Sweet, sour, salty taste dominated food accumulates *kapha*.

During *śiśira ṛtu*

कफ दुष्टि लक्षण (Kapha Duṣṭi Lakṣaṇa)

तच्छ्रुत्वा मरीचिवचः काव्य उवाच–सोम एव शरीरे श्लेष्मान्तर्गतः कुपिता-कुपितः शुभाशुभानि करोति; तद्यथा–दार्ढ्यं शैथिल्यमुपचयं कार्श्यमुत्साहमालस्यं वृषतां क्लीबतां ज्ञानमज्ञानं बुद्धिं मोहमित्येवमादीनि चापराणि द्वन्द्वानीति ॥ *C. Su. 12/12*

Soma which is represented by *kapha* and gives rise to good or bad effects depending on its normalcy and abnormalcy i.e. firmness and laxity, plumpness and emaciation, enthusiasm and laziness, potency and impotency, knowledge and ignorance, understanding and confusion and such other dual functions.

कफज नानात्मज विकार (Kaphaja Nānātmaja Vikāra)

कफज नानात्मज विकार (20 types of *Kaphaja nānātmaja vikāra)*

दोष वृद्धि, क्षय एवं दोष कर्म (Doṣa Vṛddhi, Kṣaya evam Doṣa Karm)

वातवह स्रोतो दुष्टि प्रकोप हेतु (Vātavaha Sroto Duṣṭi Prakopa Hetu) or वातप्रकोप हेतु (Vātaprakopa hetu)

Doṣa Sañcaya Hetu

तत्र दोषमेकैकं त्रयस्त्रयो रसाञ्जनयन्ति त्रय स्त्रयश्च-योपशमयन्ति ॥ *C.Vi 1/6*

3 *Rasās* accumulates the *doṣās* and 3 *Rasās (Madhura, āmla & lavaṇa)* subsides the *doṣa* they are as follows–

वात वृद्धि लक्षण (*Vāta Vṛddhi Lakṣaṇa*)

तत्र, वातवृद्धौ वाक्पारुष्यं कार्श्यं कार्ष्ण्यं गात्रस्फुरण-मुष्णकामिता निद्रानाशोऽल्पबलत्वं गाढवर्चस्त्वं च।
S.Su 15/18

कार्श्यकार्ष्ण्यगात्रकम्पस्फुरणोष्णकामिता संज्ञानिद्रानाश-बलेन्द्रियोपघातास्थिशूलमज्जाशोष मलसङ्गाध्मानाटोपमोहदैन्यभय शोकप्रलापादिभिर्वृद्धोः वायुः पीडयति। *A.S.Su 19/6*

तथा खरपरुषविशदसुषिरारुणवर्णकषायविरसमुखत्व-शोषशूलसुप्तिसङ्कोचनस्तम्भनखञ्जतादीनि च वायोः कर्माणि; तैरन्वितं वातविकारमेवाध्यवस्येत् ॥ *C.Su 20/12*

वृद्धस्तु कुरुतेऽनिलः ॥ कार्श्यकार्ष्ण्योष्णकामत्वकम्पाना-हशकृद्ग्रहान्। बलनिद्रेन्द्रियभ्रंशप्रलापभ्रमदीनताः ॥
A.H.Su 11/5-6

1.	*Kārśya*	- Emaciation
2.	*Kārṣṇya*	- Blackish discoloration
3.	*Gātra sphūraṇa*	- Throbbing sensation in body parts
4.	*Gātra kampa*	- Tremors
5.	*Uṣṇa kāmita*	- Desire for warmthness
6.	*Sañjnā*	- Loss of Consciousness
7.	*Nidrānāśa*	- Loss of sleep
8.	*Alpa balatva*	- Decrease in strength
9.	*Gāḍa varca*	- Hard Stools
10.	*Indriyopaghāta*	- Diminution of function of sensory faculties
11.	*Asthiśūla*	- Pain in the bones
12.	*Majjā śoṣa*	- Diminution of bone marrow
13.	*Mala saṅga*	- Constipation
14.	*Ādhmana*	- Distension of abdomen due to *vāta*
15.	*Āṭopa*	- Gurgling sound in the intestine
16.	*Moha*	- Delusion
17.	*Dainya*	- Timidity
18.	*Bhaya*	- Fear
19.	*Śoka*	- Grief
20.	*Pralāpa*	- Delirium
21.	*Vāk pāruṣya*	- Harshness of Speech
22.	*Sramsa*	- Looseness

23. *Bhramsa*	Dislocation
24. *Vyāsa*	Expansion
25. *Saṅga*	Obstruction
26. *Bheda*	Separation
27. *Sāda*	Weakness
28. *Harṣa*	Excitation
29. *Tarṣa*	Thirst
30. *Varta*	Circular movement
31. *Cala*	Motion
32. *Toda*	Piercing pain
33. *Vyathā*	Pain or discomfort
34. *Ceṣṭā*	Increased activities
35. *Khara*	Coarseness
36. *Paruṣa*	Harshness
37. *Viśada*	Non Sliminess
38. *Suṣira*	Porousness
39. *Aruṇa varṇa*	Reddish lustre
40. *Kaṣāya rasa*	Astringent taste in mouth
41. *Virasa mukha*	Tastelessness in mouth
42. *Śoṣa*	Wasting
43. *Śūla*	Various kinds of pain
44. *Supti*	Numbness
45. *Sankoca*	Contraction
46. *Stambha*	Rigidity
47. *Khañja*	Lameness
48. *Kampa*	Tremors
49. *Anaha*	Distention of abdomen
50. *Śakṛdgraha*	Constipation

50. *Bala evam Indriyabhramsam* - Loss of strength and of sensory functions,

51. Increase in qualities and actions of *vāta*

Proper examination is essential to know the condition of the *doṣās*.

पित्त वृद्धि लक्षण (Pitta Vṛddhi Lakṣaṇa)

पित्तवृद्धौ पीतावभासता संतापः शीतकामित्वमल्पनिद्रता मूर्च्छा बल-हानिरिन्द्रियदौर्बल्यं पीतविण्मूत्रनेत्रत्वं च । *S.Su 15/13*

पीतत्वग्लानीन्द्रियदौर्बल्यौजोविस्रंसशीताभिलाष दाहतिक्तास्यतातृण्मूर्च्छाल्पनिद्रताक्रोधादिभिः पित्तम् ।

A.S.Su 19/5

तद्यथा–दाहौष्ण्यपाकस्वेदक्लेदकोथकण्डूस्रावरागा यथास्वं च गन्धवर्णर–साभिनिर्वर्तनं पित्तस्य कर्माणि; तैरन्वितं पित्तविकारमेवाध्यवस्येत् ॥ *C.Su 20/15*

पीतविण्मूत्रनेत्रत्वक्क्षुत्तृड्दाहाल्पनिद्रताः । पित्तम् ....।

A.H.Su 11/5-7

1. *Pitāvabhāsatā*	Yellowish discolouration of the body
2. *Santāpa*	Increased body temperature
3. *Śitakāmitva*	Desire for cold things
4. *Alpanidratā*	Disturbed sleep or diminished sleep
5. *Mūrcchā*	Fainting
6. *Balahāni*	Loss of strength
7. *Indriya dourbalya*	Weakness in sense organs
8. *Pitaviṇmūtranetratvam*	Yellowish discolouration of stool, urine, eyes.
9. *Glāni*	Fatigue
10. *Ojovisramsa*	Displacement of Ojas
11. *Dāha*	Burning sensation
12. *Tiktāsyatā*	Bitter taste in mouth
13. *Tṛṣṇā*	Thirst
14. *Krodha*	Anger
15. *Pāka*	Suppuration
16. *Sveda*	Excessive perspiration
17. *Kleda*	Sloughing
18. *Kotha*	Putrification
19. *Kaṇḍu*	Itching
20. *Srāva*	Discharge
21. *Rāga*	Redness
22. *Yathāsvam ca gandha varṇa rasā bhi nirvartanam*	Exhibition of inherent smell i.e. fishy smell, all colours except white and red, pungent and sour taste

23. Enhanced qualities of *pitta* along with excacerbated functions.

कफ वृद्धि लक्षण (Kapha Vṛddhi Lakṣaṇa)

श्लेष्मवृद्धौ शौक्ल्यं शैत्यं स्थैर्यं गौरवमवासादस्तन्द्रा निद्रा सन्धिविश्लेषश्च ॥ *S.Su 15/18*

श्वैत्यशैत्यस्थौल्यालस्यगौरवाङ्गसादस्त्रोतः पिधानमूर्च्छातन्द्रा निद्राश्वासकासप्रसेकहृल्लासाग्निसादसन्धिविश्लेषादिभिः श्लेष्मा ॥

A.S.Su 19/5

तद्यथा–श्वैत्यशैत्यकण्डूस्थैर्यगौरवस्नेहसुप्तिक्लेदोपदेह-बन्धमाधुर्यचिरकारित्वानि श्लेष्मणः कर्माणि; तैरन्वितं

श्लेष्मविकारमेवाध्यवस्येत् ॥ *C.Su 20/18*

–श्लेष्माऽग्निसदनप्रसेकालस्यगौरवम् । श्वैत्यशैत्यश्लथाङ्गत्वं श्वासकासातिनिद्रताः । *A.H.Su 11/7-8*

1. *Śouklyam* - Whitish discolouration
2. *Śaityam* - Coldness
3. *Sthairyam* - Sluggish or absence of movements
4. *Gaurava* - Heaviness
5. *Avasāda* - Debility
6. *Tandrā* - Stupor
7. *Nidrā* - Sleep
8. *Sandhi viśleṣa* - Looseness in joints
9. *Sthaulya* - Obesity or plumpness
10. *Ālasya* - Fatigue
11. *Srotaḥ pidhāna* - Obstruction in channels
12. *Mūrchā* - Fainting
13. *Śvāsa* - Difficulty in breathing
14. *Kāsa* - Cough
15. *Praseka* - Excessive salivation
16. *Hṛllāsa* - Nausea
17. *Agnisāda* - Weakness in digestive functions
18. *Kaṇḍu* - Itching
19. *Sneha* - Unctuousness
20. *Supti* - Numbness
21. *Kleda* - Stickiness
22. *Upadeha* - Accumulation of waste substances over body
23. *Bandha* - Obstruction to normal path
24. *Mādhurya* - Sweet taste in mouth
25. *Cirakāritva* - Chronicity of the diseases.
26. Excacerbation of normal qualities and properties

18 Types of *Kṣaya* described in the *Caraka Saṁhitā Kiyantaḥ Śirasiyo-adhyāya* (C S Su 17/63-72)

1 *Vāta Kṣaya*

2 *Pitta Kṣaya*

3 *Kapha Kṣaya*

4 *Rasa Kṣaya*

5 *Rakta Kṣaya*

6 *Māmsa Kṣaya*

7 *Meda Kṣaya*

8 *Asthi Kṣaya*

9 *Majjā Kṣaya*

10 *Śukra Kṣaya*

11 *Mūtra Kṣaya*

12 *Sakṛd Kṣaya*

Indriya Mala

13. *Mukha Mala*

14. *Nāsikā Mala*

15. *Cakṣu Mala*

16. *Karṇa Mala*

17. *Tvak Mala*

18. *Ojas*

वात क्षय लक्षण (Vāta Kṣaya Lakṣaṇa)

तत्र, वातक्षये मन्दचेष्टताऽल्पवाक्त्वमप्रहर्षो मूढसंज्ञता च । *S.Su 15/11*

प्रसेकारुचिहृल्लाससंज्ञामोहाल्पावाक्चेष्टताप्रहर्षाङ्गसादाग्निवैषम्यादिभिः क्षीणोवायुः पीडयति । *A.S.Su 19/9*

लिङ्गं क्षीणेऽनिलेऽङ्गस्य सादोऽल्पं भाषिते हितम् । संज्ञामोहस्तथा श्लेष्मवृद्ध्युक्तामयसम्भवः ॥ *A.H.Su 11/15*

1. *Manda ceṣṭatā* - Diminished activities
2. *Alpa vak* - Speak less or loss of speech
3. *Apraharṣa* - Lack of excitation
4. *Mūḍha sañjatā* - Diminished mental faculties
5. *Praseka* - Excessive salivation
6. *Aruci* - Anorexia
7. *Hṛllāsa* - Nausea
8. *Sanjñā* - Loss of consciousness
9. *Moha* - Delusion
10. *Aṅga sāda* - Debility
11. *Agni vaiṣamya* - Disorders of digestion
12. Diminution of qualities and properties of *vāta*

पित्त क्षय लक्षण (Pitta Kṣaya Lakṣaṇa)

पित्तक्षये मन्दोष्माग्निता निष्प्रभता च । *S.Su 15/7*

स्तम्भशैत्यानियततोदारोचका विपाकाङ्गपारुष्यकम्पगौरवनखनयनशौक्ल्यादिभिः पित्तम् । *A.S.Su 19/5*

पित्ते मन्दोऽनलः शीतं प्रभाहानिः... *A.H.Su 11/16*

1. *Mandoṣmatā* - Diminished body

temperature

2. *Mandāgnitā* - Sluggish digestive functions
3. *Niṣprabhatā* - Loss of complexion
4. *Stambha* - Stiffness
5. *Śaitya* - Coldness
6. *Aniyata toda* - Irregular pains
7. *Arocaka* - Anorexia
8. *Avipāka* - Indigestion
9. *Aṅga pāruṣya* - Roughness in body parts
10. *Kampa* - Tremors
11. *Gaurava* - Heaviness
12. *Nakha, nayana śouklyam* - Whitish discolouration of nails and eyes.
13. *Prabhāhāni* - Loss of luster of the body
14. Diminished qualities and properties of *pitta*

कफ क्षय लक्षण (Kapha Kṣaya Lakṣaṇa)

श्लेष्मक्षये रूक्षताऽन्तर्दाह आमाशयेतरश्लेष्माशयशून्यता सन्धिशैथिल्य (तृष्णा दौर्बल्यं प्रजागरणं) च ॥ *S.Su 15/11*

भ्रमोद्वेष्टनानिद्राङ्गमर्दपरिप्लोषतोद दवादाहस्फोटनवेपन-धूमायनसन्धि शैथिल्यहृदयद्रवश्लेष्माशयशून्यातादिभिः श्लेष्मा ॥
A.S.Su 19/9

–कफे भ्रमः । श्लेष्माशयानां शून्यत्वं हृद्द्रवः श्लथसन्धिता ॥
A.H.Su 11/16

1. *Rūkṣatā* - Dryness in body
2. *Antardāha* - Burning sensation inside
3. *Amāseyatara śleṣma sūnyatā* - Emptiness of śleṣma in *āmāśaya* (stomach) and other places of *kapha*
4. *Sandhi śaithilya* - Looseness of joints
5. *Tṛṣṇā* - Thirst
6. *Daurbalya* - Debility
7. *Prajāgaraṇa* - Loss of sleep in night
8. *Bhrama* - Giddiness
9. *Udveṣṭana* - Twitching pain
10. Aṅgamarda - Body aches
11. *Pariploṣa* - Mild burning sensation
12. *Toda* - Pricking pain
13. *Dava Dāha* - Localised burning sensation
14. *Sphoṭana* - Bursting
15. *Vepana* - Tremors
16. *Dhūmāyana* - Hot fumes comes out from mouth
17. *Hṛdayadrava* - Palpitations
18. Reduction in qualities and properties of *kapha*

आशयापकर्ष हेतु (Āśayāpakarṣa Hetu)

आशयापकर्षतो यथा-यदा स्वमानस्थितमेव दोषं स्वाशयादाकृष्य वायुः स्थानान्तरं गमयति तदा स्वमानस्थितोऽपि स विकारं जनयति । *M. Ni 1/5 (Madhukoṣa)*

Āśayāpakarṣa means normal equilibrium condition of *doṣās* moves from their own place by the influence of *vāta* and produces diseases.

For example: If normal *doṣa* moves to different places other than its normal path and their it becomes the abnormal one because that place is not conducive to that particular *doṣa* and produces twelve alternant conditions of *doṣās* depending on their aggravation & diminution together.

प्रकृतिस्थं यदा पित्तं मारुतः श्लेष्मणः क्षये ।
स्थानादादाय गात्रेषु यत्र यत्र विसर्पति ॥
तदा भेदश्च दाहश्च तत्र तत्रानवस्थितः ।
गात्रदेशे भवत्यस्य श्रमो दौर्बल्यमेव च ॥
प्रकृतिस्थं कफं वायुः क्षीणे पित्ते यदा बली ।
कर्षेत् कुर्यात्तदा शूलं सशैत्यस्तम्भगौरवम् ॥
यदाऽनिलं प्रकृतिगं पित्तं कफपरिक्षये ।
संरुणद्धि तदा दाहः शूलं चास्योपजायते ॥
श्लेष्माणं हि समं पित्तं यदा वातपरिक्षये ।
सन्निरुन्ध्यात्तदा कुर्यात् सतन्द्रागौरवं ज्वरम् ॥
प्रवृद्धो हि यदा श्लेष्मा पित्ते क्षीणे समीरणम् ।
रुन्ध्यात्तदा प्रकुर्वीत शीतकं गौरवं रुजम् ॥
समीरणे परिक्षीणे कफः पित्तं समत्वगम् ।
कुर्वीत सन्निरुन्धानो मृद्वग्नित्वं शिरोग्रहम् ॥
निद्रां तन्द्रां प्रलापं च हृद्रोगं गात्रगौरवम् ।
नखादीनां च पीतत्वं ष्ठीवनं कफपित्तयोः ॥
हीनवातस्य तु श्लेष्मा पित्तेन सहितश्चरन् ।
करोत्यरोचकापाकौ सदनं गौरवं तथा ॥
हृल्लासमास्यस्त्रवणं पाण्डुतां दूयनं मदम् ।
विरेकस्य च वैषम्यं वैषम्यमनलस्य च ॥
हीनपित्तस्य तु श्लेष्मा मारुतेनोपसंहितः ।
स्तम्भं शैत्यं च तोदं च जनयत्यनवस्थितम् ॥
गौरवं मृदुतामग्नेर्भक्ताश्रद्धां प्रवेपनम् ।
नखादीनां च शुक्लत्वं गात्रपारुष्यमेव च ॥

मारुतस्तु कफे हीने पित्तं च कुपितं द्वयम्।
करोति यानि लिङ्गानि शृणुतानि समासतः॥
भ्रममुद्वेष्टनं तोदं दाहं स्फुटजवेपने।
अङ्गमर्दं परीशोषं दूयनं धूपनं तथा॥
वातपित्तक्षये श्लेष्मा स्रोतांस्यपिदधद्भृशम्।
चेष्टाप्रणाशं मूर्च्छां च वाक्सङ्गं च करोति हि॥
वातश्लेष्मक्षये पित्त देहौजः स्रंसयच्चरेत्।
ग्लानिमिन्द्रियदौर्बल्यं तृष्णां मूर्च्छां क्रियाक्षयम्॥
पित्तश्लेष्मक्षये वायुर्मर्माण्यतिनिपीडयन्।
प्रणाशयति संज्ञां च वेषयत्यथवा नरम्॥

C. S.Su. 17/45-61

1. When the *kapha* is in the state of diminution, the aggravated *vāta* carries the normal state of *pitta* to different places and produces symptoms like cracking, burning sensation exhaustion and weakness all over the body.
2. When *pitta* is their in the state of diminution, the aggravated *vāta* carries the equilibrium *kapha* to different places and manifest symptoms like pain, coolness, stiffness and heaviness.
3. When *kapha* is their in the state of diminution, if *vāta* gets obstruction from normal *pitta* then it produces burning sensation and pain.
4. When *vāta* is their in the state of diminution and *pitta* present in equilibrium state brings obstruction in the path of *kapha* and manifest drowsiness, heaviness & fever.
5. When *pitta* is their in the state of diminution, if *vāta* gets obstruction by aggravated *vāta* then it manifest coolness, heaviness and pain.
6. When *vāta* is their in the state of diminution, if *kapha* obstructs the normal *pitta* and produces mildness in digestive power, stiffness in head, excessive sleep, drowsiness, delirium heart diseases, heaviness in the body, yellowishness of the nails, along with expectoration of *kapha* and *pitta*.
7. When *vāta* is their in the state of diminution, if *kapha* moves along with *pitta* and produces anorexia, indigestion, general malaize, heaviness, nausea, salivation, pallor, burning sensation, intoxication, irregularities in purgation and digestion.
8. When *pitta* is their in the state of diminution, if *kapha* combines with *vāta* and manifest symptoms like unstable stiffness, cold, pain, heaviness, mild digestive power, dislike for food, trembling, pallor in nails and roughness in entire body.
9. When *kapha* is their in the state of diminution, if aggravated *vāta* and *pitta* combines and produces giddiness, pain, cramps, burning & cracking sensation, trembling, dryness, increased warmthness and steaming sensation.
10. When *vāta* & *pitta* are in the state of diminution, if *kapha* obstructs the channels and manifest sluggish or loss of activity, fainting and loss of speech.
11. When *vāta* & *kapha* are in the state of diminution, if *pitta* eliminates *ojas* from the body & causes depression, weakness in sense organs, thirst, fainting and loss of action.
12. When *pitta* and *kapha* are in the state of diminution, *vāta* afflicts the vital organs very badly, loss of consciousness and trembling.

आवरण (Āvaraṇa)

तस्मात् त्रिष्वपि दोषेषु वायुरेव उत्तन्यायेन प्रधानम् अतः कुपितः पित्तकफौ समुदीर्य्य ताभ्यामावृतमार्गोऽपि तत्र तत्र प्रदेशे गदान् करोति। तथा रसादीशंच तत्र तत्र क्षिपन् संशोषयेत्।

C.Ci 28/59-60 (Cakrapāṇi)

तस्मात् त्रिष्वपि दोषेषु वायुरेवोत्तन्यायेन प्रधानम - Thus *Vāta* is considered as *Pradhāna* (superior) among remaining *Doṣa*.

अतः कुपितः पित्तकफौ समुद्धूय ताभ्यामावृतमागीऽपि तत्र तत्र प्रदेशे गदान् करोति - The vitiated *Tridoṣa* gets lodged in different places and manifestation of disease.

तथा रसादींश्च तत्र तत्र क्षिपन संशोषयेत - Because of the vitiation and obstruction by *Tridoṣa* the *Rasādi Doṣa* (diminution of *Rasa*) in the body.

All the three *doṣās* circulate all over the body through channels. Out of three *vāta* having specific property enters the minutest channels of the body. That's why *vāta* is said to be powerful one. Inspite of getting occlusion by *pitta, kapha,* *āma* etc. *vāta* is capable of scattering the *pitta, kapha* to different body parts and causes diseases by favoring *doṣa duṣya sammurchanā* in occluded *Srotas*. *Vāta* also brings dryness in *dhātus*.

वायोर्धातुक्षयात् कोपो मार्गस्यावरणेन च वातपित्तकफा देहे सर्वस्त्रोतो-ऽनुसारिणः । वायुरेव हि सूक्ष्मत्वाद्द्वयोस्तत्राप्युदीरणः । कुपितस्तौ समुद्धूय तत्र तत्र क्षिपन् गदान् । करोत्यावृत-मार्गत्वाद्रसादींश्चोपशोषयेत् । *C.Ci 28/59-60*

Generally *Vāta Prakopa* occurs due to following two reason :

1. *Dhātu Kṣaya* (diminution of vital tissue elements)
2. *Mārgāvaraṇa* (obstruction to its normal movement).

The *Vāta, Pitta* and *Kapha* circulate continuously throughout the body channels. The aggravated *Vāta* owing to its subtle characteristics is really the impeller of the other two. The Aggravated *Vāta* propels the other two *Doṣa* and dislodges them about everywhere and causing various diseases. Due to *Āvaraṇa* (obstruction in its circulation), it further causes diminution of the body nutrient fluid and other body elements.

आवरण भेद *(Classification of Āvaraṇa)*

वायोरावरणं चातो बहुभेदं प्रवक्ष्यते ।

A.Hr.Ni 16/31

Innumerable varieties of *āvaraṇa* to *vāta doṣa* are explained as follows :

Totally 44 types of *āvaraṇa* described in *Āyurveda* are as follows :

1. *Annyonyāvaraṇa* of *vāta doṣa.* Occlusion among sub types of *vāta* i;e 20 types.
2. *Doṣāvṛta vāta*–13 types. Occlusion to *vāta* by *pitta* and *kapha.*
3. *Dhātvāvṛta vāta*–7 types. Occlusion to *vāta* by *dhātus.*
4. *Annāvṛta, mūtrāvṛta* and *Varcasāvṛta vāta*–3 types. Occlussion to *vāta* by food, urine, stool.
5. *Āmāvṛta vāta*–1. Occlusion to *vāta* by *āma.*

1. 20 types of Annyonyavaraṇa vāta.

मारूतानां हि पञ्चानामन्योन्यावरणे श्रुणु लिङ्गं व्याससमासाभ्यामुच्यमानं मयाऽनघ । प्राणो वृणोत्युदानादीन् प्राणं वृण्वन्ति तेऽपि च । उदानाद्यास्तथाऽन्योन्यं सर्व एव यथाक्रमम् । बिंशतिर्वरणान्येतान्युल्बणानां परस्परम् । मारुतानां हि पञ्चानां तानि सम्यक् प्रतर्कयेत् ।

C.Ci 28/199-201

Aggravated sub types of *vāta occlude mutually and responsible for the manifestation of twenty varieties of ānnyonyāvaraṇa. Prāṇa* occludes other 4 kinds of *vāta* and these four again occlude *prāṇa vāta* etc. Like this mutual occlusion develops two kinds of *annyonyāvaraṇa*.

1. *Prāṇāvṛta udāna vāta*
2. *Prāṇāvṛta samāna vāta*
3. *Prāṇāvṛta vyāna vāta*
4. *Prāṇāvṛta apāna vāta*
5. *Udānāvṛta prāṇa vāta*
6. *Vyānāvṛta prāṇa vāta*
7. *Samānāvṛta prāṇa vāta*
8. *Apanāvṛta prāṇa vāta*
9. *Samānavṛta udāna vāta*
10. *Vyanāvṛta udāna vāta*
11. *Apānāvṛta udāna vāta*
12. *Udānāvṛta samāna vāta*
13. *Vyānāvṛta samāna vāta*
14. *Apānāvṛta samāna vāta*
15. *Udānāvṛta vyāna vāta*
16. *Samānāvṛta vyāna vāta*
17. *Apānāvṛta vyāna vāta*
18. *Udanāvṛta apāna vāta*
19. *Samanāvṛta apāna vāta*
20. *Vyānāvṛta apāna vāta*
21. *Pittāvṛta vāta*
22. *Kaphāvṛta vāta*
23. *Pittāvṛta prāṇa vāta*
24. *Kaphāvṛta prāṇa vāta*
25. *Pittāvṛta udāna vāta*
26. *Kaphāvṛta udāna vāta*
27. *Pittāvṛta samāna vāta*
28. *Kaphāvṛta samāna vāta*
29. *Pittāvṛta vyāna vāta*
30. *Kaphāvṛta vyāna vāta*

31. *Pittāvṛta apāna vāta*
32. *Kaphāvṛta apāna vāta*
33. *Kapha-pittāvṛta (miśramāvaraṇa) vāta*
34. *Raktāvṛta vāta*
35. *Māmsāvṛta vāta*
36. *Medasāvṛta vāta*
37. *Asthyāvṛta vāta*
38. *Majjāvṛta vāta*
39. *Śukrāvṛta vāta*
40. *Sarva dhātvāvṛta vāta*
41. *Annāvṛta vāta*
42. *Mūtrāvṛta vāta*
43. *Varcasāvṛta vāta*
44. *Āmāvṛta vāta*

1. प्राणावृत व्यान वात लक्षण (**Prāṇāvṛta Vyāna Vāta Lakṣaṇa**)

सर्वेन्द्रियाणं शून्यत्वं ज्ञात्वा स्मृतिबलक्षयम्।
व्याने प्राणावृते लिङ्गं कर्म तत्रोर्ध्वजत्रुकम्॥
C.Ci 28/202-203

Lakṣaṇa-

- Loss of functions of sensory organs
- Loss of memory and strength.

Cikitsā- This condition is treated by the administration of therapeutic used in *Ūrdwa Jatrugata Roga* (supra-clavicular region diseases)

2. व्यानावृत प्राणवात लक्षण (**Vyānāvṛta Prāṇa Vāta Lakṣaṇa**)

स्वेदोऽत्यर्थं लोमहर्षस्त्वग्दोषः सुप्तगात्रता।
प्राणे व्यानावृते तत्र स्नेहयुक्तं विरेचनम्॥
C.Ci 28/202-203

Lakṣaṇa-

- Excessive sweating
- Horripilation.
- Skin disease
- Numbness in the body

Cikitsā- All the four modes of *Sneha Prayoga* (unctuous therapy) along with *Yāpana Basti* are recommended as treatment

3. प्राणावृत समान वात लक्षण (**Prāṇāvṛta Samāna Vāta Lakṣaṇa**)

प्राणावृते समाने स्युर्जडगद्गदमूकताः।
चतुष्प्रयोगाः शस्यन्ते स्नेहास्तत्र समापनाः॥
C.Ci 28/204-205

Lakṣaṇa-

- Difficulty in speech
- Slurring speech
- Dumbness

Cikitsā- The treatment is *Sneha Virecana* (purgation combined with unctuous substances)

4. समानावृत अपान वात लक्षण (**Samānāvṛta Apāna Vāta Lakṣaṇa**)

समानेनावृतेपाने ग्रहणी पार्श्व हद्गदाः।
शूलं चामाशये तत्र दीपनं सर्पिरिष्यते॥
C.Ci 28/205-206

Lakṣaṇa-

- *Grahaṇī gada* (diseases of *grahaṇī*)
- *Pārśva gada* (diseases of sides of chest)
- *Hṛdgada* (diseases of heart)
- *Āmāśaya śūla* (Pain in stomach)

Cikitsā- *Sarpi* (ghee) processed with *Dīpana* (digestive stimulants).

5. प्राणावृत उदान वात लक्षण (**Prāṇāvṛta Udāna Vāta Lakṣaṇa**)

Lakṣaṇa-

शिरोग्रहः प्रतिश्यायो निःश्वासोच्छ्वास संग्रहः।
हृद्रोगो मुखशोषश्चाप्युदाने प्राणसंवृते॥
तत्रोर्ध्वभागिकं कर्म कार्यमाश्वासनं तथा।
C.Ci 28/206-207

- Stiffness in head
- Rhinitis
- Obstruction to inspiration and expiration
- Diseases of heart
- Dryness of the mouth.

Cikitsā- *Ūrdhwa Jatrugata Roga Cikitsā* and *Āśvāsana* (consolation) are advised.

6. उदानावृत प्राणवात लक्षण (**Udānāvṛta Prāṇa vāta Lakṣaṇa**)

कर्मौजोबलवर्णानां नाशो मृत्युरथापि वा।
उदानेनावृते प्राणे तं शनैः शीतवारिणा॥
सिञ्चेदाश्वासयेच्चैनं सुखं चैवोपपादयेत।
C.Ci 28/207-208

Lakṣaṇa-

- Loss of activities, ojas, strength and complexion.

- Death.

Cikitsā- Śita Vari Sincana (gradual pouring with cold water) and *Āśvasana* (consolation and comforting measures to restored health.

7. उदानावृत अपान वात लक्षण (Udānāvṛta Apāna Vāta Lakṣaṇa)

उर्ध्वगेनावृतेऽपाने छर्दिश्वासादये गदाः ।
स्युर्वाते तत्र बस्त्यादि भोज्यं चैवानुलोमनम् ॥
C.Ci 28/209-210

Lakṣaṇa- Chardi Roga and *Śvāsa Roga* (diseases of dysponea).

Cikitsā- Basti (enema) and similar measures as well as diet inducing *Vātānulomana*.

8. अपानावृत उदान वात लक्षण *(Apānāvṛta Udāna Vāta Lakṣaṇa)*

मोहोऽल्पोऽग्निरतीसार उर्ध्वगेऽपानसंवृते ।
वाते स्याद्वमनं तत्र दीपनं ग्राहि चाशनम् ॥
C.Ci 28/210-211

Lakṣaṇa-

- Unconsciousness
- Suppression of power of *Agni*
- *Atisāra*

Cikitsā- Vamana (emesis) and *Dīpana* (digestive stimulant) and *Grāhi.*

9. व्यानावृत अपान वात लक्षण (Vyānāvṛta Apāna Vāta Lakṣaṇa)

वम्याध्मानमुदावर्तगुल्मार्तिपरिकर्तिकाः ।
लिङ्गं व्यानावृतेऽपाने तं स्निग्धैरनुलोमयेत ॥
C.Ci 28/211-212

Lakṣaṇa-

- Vomiting
- Abdominal distension
- *Udāvarta* (upward movement of *vāta*)
- *Gulma* (abdominal growths)
- *Parikartikā* (sawing pain in the abdomen)

Cikitsā- Snigdha Anulomana Dravya.

10. अपानावृत व्यान वात लक्षण (Apānāvṛta Vyāna Vāta Lakaṣṇa)

अपानेनावृते व्याने भवेद्विण्मूत्ररेतसाम् ।
अतिप्रवृत्तिस्तत्रापि सर्वं संग्रहणं मतम् ॥
C.Ci 28/212-213

Lakṣaṇa- Excessive discharge of stool, urine and semen.

Cikitsā- Sangrahaṇa Cikitsā

11. सामानावृत अपान वात लक्षण (Samānāvṛta Vyāna Vāta Lakṣaṇa)

मुच्छा तन्द्रा प्रलापोऽङ्गसादोऽग्न्योजो बलक्षयः ।
समानेनावृते व्याने व्यायामो लघुभोजनम् ॥
C.Ci 28/213-214

Lakṣaṇa-

- Fainting
- Drowsiness
- Delirium
- General *Malaize*
- Diminution of *Agni, ojas* and *bala.*

Cikitsā- Vyāyāma (exercise) and *Laghu Bhojana* (light diet)

12. उदानावृत व्यान वात लक्षण (Udanāvṛta Vyāna Vāta Lakṣaṇa)

स्तब्धताऽल्पाग्निताऽस्वेदश्चेष्टाहानिर्निमीलनम् ।
उदानेनावृते व्याने तत्र पथ्यं मितं लघु ॥
C.Ci 28/214-215

Lakṣaṇa-

- Stiffness
- Hypofunctioning of *Agni*
- Loss of sweating
- Sedentary habits
- Closure of the eyes

Cikitsā- Pathya āhara (wholesome food) and *Laghu* (light diet)

13-20 Remaining eight varieties of *annyonyāvaraṇa* may be diagnosed by following principle.

पञ्चान्योन्यावृतानेवं वातान् बुध्येत लक्षणैः ।
एषां स्वकर्मणं हानिर्वृद्धिर्वाऽऽवरणे मता ॥
यथास्थूलं समुद्दिष्टमेतदावरणेऽष्टकम् ।
सलिङ्गभेषजं सम्यग्बुधानां बुद्धिवृद्धये ॥
C.Ci 28/215-216

Lakṣaṇa- The mutual occlusions of remaining *prāṇāvṛta apāna vātādi* eight varieties can be understood by their signs and symptoms. It may be understood that these will be decrease in the functions of the occluded one *(āvarya)* and increase in the functions of the occluser *(āvaraka)* happens to be the general concept or either increased or decrease functions of occluded *vāta* is observed.

Anukta āvaraṇa cikitsā (General guidelines for management)

स्थानान्यवेक्ष्य वातानां वृद्धिं हानिं च कर्मणाम् ।
द्वादशावरणान्यन्यान्यभिलक्ष्य भिषग्जितम् ॥
कुर्यादभ्यञ्जनस्नेहपानबस्त्यादि सर्वशः ।
क्रममुष्णामनुष्णं वा व्यत्यासादवचारयेत् ॥
C.Ci 28/217-218

After examination of the locations and increase as well as the decrease of its functions, the physician should diagnose the remaining twelve conditions of mutual occlusions and should treat them by means of *abhyaṅga* (external application), *Snehapāna* (unctuous internal administration), *Basti* (enema) and all other procedures or may be alternatively given *Anuṣṇa* (cold) and *uṣṇa* (hot) measures.

21. पित्तवृत वात लक्षण (Pittāvṛta Vāta Lakṣaṇa)

लिङ्ग पित्तावृते दाहस्तृष्णा शूलं भ्रमस्तमः ।
कट्वम्ललवणोष्णैश्च विदाहः शीतकामिता ॥
C.Ci 28/61-62

Lakṣaṇa-

- Burning sensation
- increased thirst
- Colic pain
- Giddiness
- Feeling as if entered into darkness.
- Burning sensation increases after taking pungent, sour, saline and hot substances.
- Craving for cold substances.

22. कफावृत वात लक्षण (Kaphāvṛta Vāta Lakṣaṇa)

शैत्य गौरवशूलानि कट्वाद्युपशयोऽधिकम् ।
लङ्घनायासरुक्षोष्णकामिता च कफावृते ॥
C.Ci 28/62-63

Lakṣaṇa-

- Coldish sensation
- Heaviness
- Colic pain
- Feeling comfortable after consuming pungent, hot etc.
- Desire for fasting, exercises, ununctuous and hot substances.

23. पित्तावृत प्राणवात लक्षण (Pittāvṛta Prāṇavāta Lakṣaṇa)

मूर्च्छा दाहो भ्रमः शूलं विदाहः शीतकामिता ।
छर्दनं च विदग्धस्य प्राणे पित्तसमावृते ॥
C.Ci 28/221-222

Lakṣaṇa-

- Fainting.
- Burning sensation.
- Giddiness.
- Colic pain.
- Indigestion.
- Desire for cold substances.
- Vomits undigested food.

24. कफावृत प्राणवात लक्षण (Kaphāvṛta Prāṇa Vāta Lakṣaṇa)

ष्ठीवनं क्षवथूद्गारनिःश्वासोच्छ्वास संग्रहः ।
प्राणे कफावृते रूपाण्यरूचिश्छार्दिरिव च ॥
C.Ci 28/222-223

Lakṣaṇa- Excessive expectoration of saliva, sneezing, eructation, obstruction to inspiration and expiration, anorexia, vomiting.

25. पित्तावृत उदान वात लक्षण (Pittāvṛta Udāna Vāta Lakṣaṇa)

मूर्च्छाद्यानि च रूपाणि दाहो नाभ्युरसः क्लमः ।
आजोभ्रंशश्च सादश्चाप्युदाने पित्तसंवृते ॥
C.Ci 28/223-224

Lakṣaṇa-

- Fainting, burning sensation etc.
- Burning sensation in umbilical region and chest.
- Exhaustion.
- Loss of Ojas.
- General Malaise.

26. कफावृत उदानवात लक्षण (Kaphāvṛta Udāna Vāta Lakṣaṇa)

आवृते श्लेष्मणोदने वैवर्ण्यं वाक्स्वरग्रहः ।
दौर्बल्यं गुरुगात्रत्वमरूचिश्चोपजायते ॥
C.Ci 28/224-225

Lakṣaṇa-

- Discolouration of skin.
- Loss of speech and voice.
- Weakness.
- Heaviness of the body.
- Anorexia.

27. पित्तावृत समान वात लक्षण (Pittāvṛta Samāna Vāta Lakṣaṇa)

अतिस्वेदस्तृषा दाहो मूर्च्छा चारूचिरेव च।
पित्तावृत्ते समाने स्यादुपघातस्तथोष्मणः॥

C.Ci 28/225-226

Lakṣaṇa-

- Excessive sweating
- Thirst
- Burining sensation, fainting
- Anorexia reduction in body temperature or heat.

28. कफावृत समान वात लक्षण (Kaphāvṛta Samāna Vāta Lakṣaṇa)

अस्वेदा वह्निमान्द्यं च लोमहर्षस्तथैव च।
कफावृते समाने स्याद्गात्राणां चातिशीतता॥

C.Ci 28/226-227

Lakṣaṇa-

- Absence of sweating
- Suppression of *Agni*
- Horripilation
- Excessive coldness in the body

29. पित्तावृत व्यान वात लक्षण (Pittāvṛta Vyāna Vāta Lakṣaṇa)

व्याने पित्तावृत्ते तु स्याद्दाहः सर्वाङ्गगःक्लमः।
गात्रविक्षेप सङ्गश्च ससंतापः सवेदनः॥

C.Ci 28/227-228

Lakṣaṇa-

- Burning sensation all over the body.
- Exhaustion.
- Limited body motions along with burning sensation and pain.

30. कफावृत व्यान वात लक्षण (Kaphāvṛta Vyāna Vāta Lakṣaṇa)

गुरूता सर्वगात्राणं सर्वसन्ध्यस्थिजा रूजः।
व्याने कफावृत्ते लिङ्गं गति सङ्गस्तथाऽधिकः॥

C.Ci 28/228-229

Lakṣaṇa-

- Heaviness all over the body.
- Pain in all joints and bones.
- Excessive limitations of body movements.

31. पित्तावृत अपान वात लक्षण (Pittāvṛta Apāna Vāta Lakṣaṇa)

हारिद्रमूत्रवर्चस्त्वं तापश्च गुदमेढ्रयोः।
लिङ्गं पित्तावृतेऽपाने रजसश्चातिवर्तनम्॥

C.Ci 28/229-230

Lakṣaṇa-

- Yellowish discoloration of urine and stool.
- Sensation of heat in anus and penis.
- Excessive discharge of menstrual fluid.

32. कफावृत अपान वात लक्षण (Kaphāvṛta Apāna Vāta Lakṣaṇa)

भिन्नामश्लेष्मसंसृष्टगुरुवर्चः प्रवर्तनम्।
श्लेष्मण संवृतेऽपाने कफमेहस्व चागमः॥

C.Ci 28/230-231

Lakṣaṇa-

- Patient passes loose watery stools, mixed with *āma* and *kapha*.
- *Kaphaja prameha* may manifest.

33. कफपित्तावृत वात लक्षण (Kapha Pittāvṛta Vāta Lakṣaṇa)

लक्षणानां तु मिश्रत्वं पित्तस्य च कफस्य च।
उपलक्ष्य भिषग्विद्वान् मिश्रमावरणं वदेत्॥

C.Ci 28/231-232

Lakṣaṇa- Mixed features of *Kaphāvṛta vāta* and *pittāvṛta vāta* observed.

34. रक्तावृत वात लक्षण (Raktāvṛta Vāta Laksaṇa)

रक्तावृते सदाहार्तिसत्त्वङ्मांसान्तरजो भृशम्।
भवेत् सरागः श्वयथुर्जायन्ते मण्डलानि च॥

C.Ci 28/63-64

Lakṣaṇa-

- Excessive pain associated with burning sensation in between skin and muscle tissue.
- Inflammatory signs and symptoms like swelling, reddishness etc.
- Circular rashes over skin.

35. मांसावृत वात लक्षण (Māmsāvṛta Vāta Lakṣaṇa)

कठिनाश्च विवर्णाश्च पिडकाः श्वयथुयुस्तथा ।
हर्षः पिपीलिकानां च संचार इव मांसगे ॥
C.Ci 28/64-65

Lakṣaṇa-

- Appearance of hard, discolored pimples.
- Swelling
- Horripilation.
- Formiculation i.e. feeling as if ants are crawling inside the body.

36. मेदसावृत वात लक्षण (Medasāvṛta Vāta Lakṣaṇa)

चलः स्निग्धो मृदुः शीतः शोफोऽङ्गेष्वरुचिस्तथा ।
आढ्यवात इति ज्ञेयः स कृच्छ्रो मेदसाऽऽवृतः ॥
C.Ci 28/65-66

Lakṣaṇa-

- Appearance of swelling in the body parts which is mobile, unctuous, soft and cold.
- Anorexia.
- It is also called *āḍhyavāta* which is very difficult to cure.

37. अस्थ्यावृत वात लक्षण (Asthyāvṛta Vāta Lakṣaṇa)

स्पर्शमस्थ्नाऽऽवृते तृष्णं पीडनं चाभिनन्दति ।
संभज्यते सीदति च सूचिभिरिव तुद्यते ॥
C.Ci 28/66-67

Lakṣaṇa-

- Patient likes kneading and hot application.
- Breaking pain.
- Depression.
- Feels as if pierced by needles.

38. मज्जावृत वात लक्षण (Majjāvṛta Vāta Lakṣaṇa)

मज्जावृते विनामः स्याज्जृम्भणं परिवेष्टनम् ।
शूलं तु पीड्यमाने च पाणिभ्यां लभते सुखम् ॥
C.Ci 28/67-68

Lakṣaṇa-

- Bending.
- Yawning.
- Twisting or Cramps.
- Patient gets relief for pain after pressing by hands.

39. शुक्रावृत वात लक्षण (Śukrāvṛta Vāta Lakṣaṇa)

शुक्रवेगोऽतिवेगो वा निष्फलत्वं च शुक्रगे ।
C.Ci 28/68

Lakṣaṇa-

- Non-ejaculation or excessive ejaculation of semen.
- Sterility.

40. सर्व धात्वावृत वात लक्षण (Sarva Dhātvāvṛta Vāta Lakṣaṇa)

सर्वधात्वावृते वायौ श्रोणिवङ्क्षणपृष्ठरूक् ।
विलोमो मारुतोऽस्वस्थं हृदयं पीड्यतेऽति च ।
A.Hr.Ni 16/41-42

Lakṣaṇa-

- Pain in the pelvis, groins and back.
- *Vāta* moves in hapazard directions.
- Disturbs the equilibrium state of *doṣās, dhātus, malās, Agni* etc.
- Severe Pain in the heart.

41. अन्नावृत वात लक्षण (Annāvṛta Vāta Lakṣaṇa)

भुक्ते कुक्षौ च रुगजीर्णे शाम्यत्यन्नावृतेऽनिले ।
C.Ci 28/69

Lakṣaṇa- Pain in abdomen after consumption of food, gets relief for pain after the digestion of food.

42. मूत्रावृत वात लक्षण (Mūtrāvṛta Vāta Lakṣaṇa)

मूत्राप्रवृत्तिराध्मानं बस्तौ मूत्रावृतेऽनिलो ।
C.Ci 28/69

Lakṣaṇa-

- Retention of urine.
- Distension and pain in urinary bladder.

43. वर्चसावृत वात लक्षण (Varcasāvṛta Vāta Lakṣaṇa)

वर्चसोऽतिविबन्धोऽधः स्वे स्थाने परिकृन्तति व्रजत्याशु जरां स्नेहो भुक्ते चानह्यते नरः । चिरात् पीडितमन्येन दुःखं शुष्कं शकृत् सृजेत् । श्रोणीवंक्षणपृष्ठेषु रुग्विलोमश्च मारुतः । अस्वस्थं हृदयं चैव वर्चसात्वा-वृतेऽनिले । *C.Ci 28/70-71*

Lakṣaṇa-

- Severe constipation.
- Cutting type of pain in anorectal region.
- Quick digestion of unctous substances.

- Patients passes stool which is dry with difficulty and delay and the voiding is painful.
- Gives discomfort in abdomen.
- Pain in the hips, groin and back.
- Upward movement of *vāta* inside the abdomen.
- Development of abnormality in the heart.

44. आमावृत वात या सामवात लक्षण (Āmāvṛta Vāta or Sāma Vāta Lakṣaṇa)

सर्वं च मारूतं सामं तन्द्रास्तैमित्य गौरवैः।
स्निग्धत्वारोचकालस्यशैत्य शोफाग्निहानिभिः॥
कटुरूक्षाभिलाषेण तद्विधोपशयेन च।
युक्तं विद्यान्निरामं तु तन्द्रादीनां विपर्ययात्॥

A.Hr.Ni 16/29-30

Lakṣaṇa-

- Stupor.
- Rigidity or inactiveness.
- Feeling of heaviness.
- Unctuousness.
- Loss of power of *Agni.*
- Anorexia.
- Lassitude.
- Cold sensation.
- Swelling.
- Desire for pungent, dry and gets relief by such things
- Opposite to above symptoms indicate *nirāma* state.

General effects of Vāta Āvaraṇa Avarya

आवर्य (Āvarya)

अत्र आवार्य्याणां बलीयावरणात् स्वकर्म हानिर्भवति।

C.Ci 28/215-216 (Cakrapāṇi)

If *vāta* occluded by another powerful *vāta,* then the occluded one i:e *āvarya* loses it functions.

आवरक (Āvaraka)

आवरकस्य तु स्वकर्मवृद्धिर्भवति।

C.Ci 28/215-216 (Cakrapāṇi)

Āvaraka is one which occludes the other and there will be increase in its functions.

It is also accepted that if *āvarya* is stronger than *āvaraka* then increased symptoms of *āvarya* is observed and vice *versa. C.Ci 28/215-216 (Cakrapāṇi)*

आवृतं श्लेष्मपित्ताभ्यां प्राणं चोदानमेव च।
गरीयस्त्वेन पश्यन्ति भिषजः शास्त्रचक्षुषः॥
विशेषज्जीवितं प्राणे उदाने संश्रितं बलम्।
स्यात्तयोः पीडनाद्धानिरायुषश्च बलस्य च॥
सर्वेऽप्येतेऽपरिज्ञाताः परिसंवत्सरास्तथा।
उपेक्षणादसाध्याः स्युरथवा दुरुपक्रमाः॥

C.Ci 28/233-235

- Obstruction to *prāna vāta* and *udāna vāta* by *kapha* and *pitta* develops serious fatal condition because life is dependent on *prāṇa vāta* and strength is dependent on *udāna vāta.* Therefore, these occlusions leads to reduction of longevity and strength.
- If physician diagnose the disease incorrectly or symptoms persist for more than one year or if neglected or if managed improperly leading to incurability of the disease.

आवरण उपद्रव (Complications due to Āvaraṇa)

हृद्रोगो विद्रधिः प्लीहा गुल्मोऽतिसार एव च।
भवत्युपद्रवास्तेषामावृतानामुपेक्षणात्॥
तस्मादावरणं वैद्यः पवनस्योपलक्षयेत।
पञ्चात्मकस्य वातेन पित्तेन श्लेष्मणाऽपि वा॥

C.Ci 28/236-238

If *āvaraṇa* condition is neglected leading to development of serious diseases like diseases of heart, abscess, splenic abnormality, abdominal growths, diarrhoea. That's why proper assessment and examination of occlusions of five types *vāta* by other kinds of *vāta, pitta, kapha* etc. required.

Paraspara Avṛta Vāta / Anyonya Āvaraṇa – this group includes 20 types in which one type of vata occludes the other type of *vāta* and hampers its functions.

S.No.	Type of Āvaraṇa	Symptoms and Signs
1	*Prāṇa āvṛta vyāna Vāta*	Loss of functions of sensory organs, memory and strength.
2	*Prāṇa āvṛta Samāna vāta*	Difficulty in speech, slurring speech and dumbness.
3	*Prāṇa āvṛta apāna vāta*	Diseases of grahani, diseases of sides of chest, diseases of heart and pain in stomach.
4	*Prāṇa āvṛta Udāna vāta*	Stiffness in the head, rhinitis, obstruction to inspiration and expiration, diseases of the heart and dryness of the mouth.
5	*Vyāna āvṛta Prāṇa Vāta*	Excessive sweating, horripilation, skin disease and numbness in the body.
6	*Vyāna āvṛta Apāna Vāta*	Vomiting, abdominal distension, *udavarta* (upward movement of *vāta*), gulma (abdominal growths) and parikartika (sawing pain in the abdomen).
7	*Samāna āvṛta* apāna *Vāta*	Diseases of *grahaṇī*, sides of chest, heart diseases and pain in the abdomen.
8	*Samāna āvṛta vyāna Vāta*	Fainting, drowsiness, delirium, general malaise and diminution of *agni, ojas* and *bala*.
9	*Udāna āvṛta Prāṇa Vāta*	Loss of activities, ojas, strength and complexion and death.
10	*Udāna āvṛta Apāna Vāta*	*Cardi roga* and *śwāsa* roga.
11	*Apāna āvṛta Udāna Vāta*	Unconsciousness, suppression of power of *agni* and *atisāra*.
12	*Apāna āvṛta Vyāna Vāta*	Excessive discharge of stool, urine and semen.
13-20		Remaining eight types – No clear description of their features has been done but the principal to know them has been told in *Caraka Saṁhitā* as – generally the functions of the occluded one (avarya) will decrease while there will be an increase in the functions of the occluder (avaraka) or sometimes there can be an increase or decrease in the functions of the occluded *Vāta*.

The Kapha Dosha āvṛta Vātas

This group includes six types and their distinct clinical features described below:

21	*Kapha āvṛta Vāta*	Feeling of cold and heaviness, colic pain, considerable relief by the intake of pungent and other such ingredients and a desire for fasting, exercise and ununctuous as well as hot ingredients.
22	*Kapha āvṛta Prāṇa Vāta*	Excessive expectoration of saliva, sneezing, eructation, obstruction to inspiration and expiration, anorexia, vomiting
23	*Kapha āvṛta Udāna Vāta*	Discoloration of skin, loss of speech and voice, weakness, heaviness of the body and anorexia.
24	*Kapha āvṛta Samāna Vāta*	Absence of sweating, suppression of the digestive power, horripilation and excessive coldness of the body
25	*Kapha āvṛta Vyāna Vāta*	Heaviness all over the body, pain in all joints and bones and excessive limitations of body movements.

26	*Kapha āvṛta Apāna Vāta*	Passage of loose watery stools mixed with ama and kapha, manifestation of kaphaja prameha.

Pitta āvṛta Vātas

This group includes six types and their distinct clinical features described below:

27	*Pitta āvṛta Vāta*	Burning sensation, increased thirst, colic pain, giddiness, feeling as if entered into darkness, increased burning sensation after taking pungent, sour, saline and hot substances and craving for cold substances.
28	*Pitta āvṛta Prāṇa Vāta*	Fainting, burning sensation, giddiness, colic pain, indigestion, desire for cold substances and vomiting of undigested food.
29	*Pitta āvṛta Udāna Vāta*	Fainting, burning sensation in umbilical region and chest, exhaustion, loss of ojas and general malaise
30	*Pitta āvṛta Samāna Vāta*	Excessive sweating, thirst, burning sensation, fainting, anorexia and reduction in body temperature or heat
31	*Pitta āvṛta Vyāna Vāta*	Burning sensation all over the body, exhaustion and limited body motions along with burning sensation and pain.
32	*Pitta āvṛta Apāna Vāta*	Yellowish discoloration of urine and stool, sensation of heat in anus and penis and excessive discharge of menstrual fluid.
33	*Kaphapitt āvṛta vāta*	Mixed features of *kaphāvṛta* and *pittāvṛta vāta lakṣaṇa* observed

Besides these there is a description of *Pitta* and *Kapha āvṛta Vāta* which has the features of both *Kapha āvṛta Vāta* and *Pitta āvṛta Vāta*. Clear description of its features has not been made.

Dhātva –āvṛta Vāta –This group includes seven subtypes and their distinct clinical features described below. This group includes starting from *rakta dhātu* to *śukra dhātu* and further sarva-dhatva *–āvṛta vāta*.

34	*Amāvṛta* or *samavāta*	Stupor, rigidity, feeling of heaviness, *lakṣaṇa* unctuousness, loss of power of agni, anorexia, lassitude, cold sensation, swelling, desire for pungent, dry and gets relieved by such things,
35	*Rakta āvṛta Vāta*	Excessive pain associated with burning sensation between the skin and muscle tissue, inflammatory signs and symptoms like swelling, reddishness etc. and circular rashes over the skin.
36	*Mansa āvṛta Vāta*	Appearance of hard discolored pimples, swelling, horripilation and a feeling as if ants are crawling inside the body.
37	*Medasa āvṛta Vāta*	Appearance of swelling in the body parts which is mobile, unctuous, soft and cold, anorexia and is also called as Adhya*vāta* which is difficult to cure.
38	*Asthya āvṛta Vāta*	Patient likes kneading and hot application, breaking pain, depression and feels as if pierced by needles.
39	*Majjā āvṛta Vāta*	Bending, yawning, twisting or cramps and patients gets relief from pain after pressing by hands.

40	*Śūkra āvṛta Vāta*	Non ejaculation or excessive ejaculation of semen and sterility.
41	*Sarva dhātu āvṛta Vāta*	Pain in the pelvis, groins and back, movement of *vāta* in haphazard directions, disturbs the equilibrium state of doshas, dhatus, malas and agni etc.; severe pain in the heart.
42	*Anna āvṛta Vāta*	Pain in the abdomen after the after consumption of food and getting relief from pain after the food is digested.
43	*Mūtra āvṛta Vāta*	Retention of urine and distension and pain in the urinary bladder.
44	*Varcasa āvṛta Vāta*	Severe constipation, cutting type of pain in the anorectal region, quick digestion of ununctuous substances; passage of stool which is dry, with difficulty and delay and the voiding is painful. There is also discomfort in the abdomen, pain in the hips, groin and back, upward movement of *vāta* in the abdomen and development of abnormality in the heart.

62 Combinations of doṣās according to Caraka Saṁhitā

Doṣa Samyoga Bheda Dviṣaṣṭi

Aniladinam Mana Vikalpajah (permulation and combination of Doṣās)

द्व्युल्बणैकोल्बणैः षट् स्युर्हीनमध्याधिकैश्च षट् ।
समैश्चैको विकारास्ते सन्निपातास्त्रयोदश ॥
संसर्गे नव षट् तेभ्य एकवृद्ध्या समैस्त्रयः ।
पृथक् त्रयश्च तैर्वृद्धैर्व्याधयः पञ्चविंशतिः ॥
यथा वृद्धैस्तथा क्षीणैर्दोषैः स्युः पञ्चविंशतिः ।
वृद्धिक्षयकृतश्चान्यो विकल्प उपदेक्ष्यते ॥
वृद्धिरेकस्य समता चैकस्यैकस्य संक्षयः ।
द्वन्द्ववृद्धिः क्षयश्चैकस्यैकवृद्धिर्द्वयोः क्षयः ॥

C.S.Su 17/41-44

I. Sannipātaḥ Trayodaśa (13 combination of three Dosas)

Dvi Ulbaṇaiḥ **(aggravation of two *Doṣās*) - three combination**

No.	*Vṛddha (+)*	*Vṛddhatara (++)*
1	*Kapha*	*Vāta Pitta*
2	*Vāta*	*Kapha Pitta*
3	*Pitta*	*Kapha Vāta*

Eka *Ulbaṇaiḥ* (aggravation of one *Doṣa*) - three combination

No.	*Vṛddha (+)*	*Vṛddhatara (++)*
4	*Vāta Pitta*	*Kapha*
5	*Kapha Pitta*	*Vāta*
6	*Kapha Vāta*	*Pitta*

Hina Madhya Adhikai Ṣaṭ **(one *Doṣa* is aggravated, another *Doṣās* is more aggravated and third *Doṣa* is most aggravated) - Six combination.**

No.	*Vṛddha (+)*	*Vṛddhatara (+++)*	*Vṛddhatama (++)*
7	*Vāta*	*Pitta*	*Kapha*
8	*Vāta*	*Kapha*	*Pitta*
9	*Pitta*	*Kapha*	*Vāta*
10	*Pitta*	*Vāta*	*Kapha*
11	*Kapha*	*Vāta*	*Pitta*
12	*Kapha*	*Pitta*	*Vāta*

Samāna Vṛddhi

13 *Vāta Pitta Kapha*

II. Saṁsarga Nava - (simultaneous aggravation of any *Doṣa* is of nine varieties)-

No.	*Vṛddha (+)*	*Vṛddhatara (++)*
14	*Vāta*	*Pitta*
15	*Vāta*	*Kapha*
16	*Pitta*	*Vāta*
17	*Pitta*	*Kapha*
18	*Kapha*	*Vāta*
19	*Kapha*	*Pitta*

Samāna Vṛddhi

No.	*Vṛddha*
20	*Vāta Pitta*
21	*Vāta Kapha*
22	*Kapha Vāta*

III. *Samaiḥ Ekaḥ* (equal aggravation of three *Doṣās*) - one combination

No.	*Vṛddha*
23	*Vāta*
24	*Pitta*
25	*Kapha*

Thus total numbers of *Vyādhi* (diseases) as per vrddi of *Doṣa* are twenty five = *Sannipāta* (13) *saṁsarga* (9) and *eka doṣa* (3).

Yathā Vṛddhyaiḥ Tathā Kṣṇaiḥ Doṣaiḥ Syah Pañcavisatiḥ

I. *Sannipataiḥ Trayodaśa* (13 combination of three *Doṣās* of thirteen types) -

Kṣaya of two *Doṣās* - three combination

No.	*Kṣaya (+)*	*Kṣayatara (++)*
1	*Kapha*	*Vāta Pitta*
2	*Vāta*	*Kapha Pitta*
3	*Pitta*	*Kapha Vāta*

Kṣaya of one *Doṣa* - three combination

No.	*Kṣaya (+)*	*Kṣayatara (++)*
4	*Vāta Pitta*	*Kapha*
5	*Kapha Pitta*	*Vāta*
6	*Kapha Vāta*	*Pitta*

Hīna Madhya Adhikaiḥ Ṣaṭ (one *Doṣa* is *Kṣaya*, another *Doṣās* is more *Kṣaya* and third *Doṣa* is mainly *Kṣaya*) - Six combination

No.	*Kṣaya (+)*	*Kṣayatara (+++)*	*Kṣayatama (++)*
7	*Vāta*	*Pitta*	*Kapha*
8	*Vāta*	*Kapha*	*Pitta*
9	*Pitta*	*Kapha*	*Vāta*
10	*Pitta*	*Vāta*	*Kapha*
11	*Kapha*	*Vāta*	*Pitta*
12	*Kapha*	*Pitta*	*Vāta*

Samāna Kṣaya

13 *Vāta Pitta Kapha*

II. *Saṁsarga Nava* - (Simultaneous *Kṣaya* of *Doṣa* is of nine types)-

No.	*Kṣaya (+)*	*Kṣayatara (++)*
14	*Vāta*	*Pitta*
15	*Vāta*	*Kapha*
16	*Pitta*	*Vāta*
17	*Pitta*	*Kapha*
18	*Kapha*	*Vāta*
19	*Kapha*	*Pitta*

Samāna Kṣaya

No.	*Kṣaya*
20	*Vāta Pitta*
21	*Vāta Kapha*
22	*Kapha Vāta*

III. *Samānaiḥ Ekaḥ* (equal *Kṣaya* of three *Doṣās*) - one combination

No.	*Kṣaya*
23	*Vāta*
24	*Pitta*
25	*Kapha*

Thus total numbers of *Vyādhi* (diseases) as per *Kṣaya* of *Doṣa* are twenty five *sannipāta*= (13) *saṁsarga* (9) and *eka Doṣa* (3).

Vṛddhi Ekasya Samatā cha Ekasya Saṅkṣayaḥ - One *Doṣa* is aggravated, the second *Doṣa* is in normal condition and the third *Doṣa* is in the state of diminution- 6 combinations

Eka Doṣa Vṛddhi Kṣaya Sama - (one *Doṣa* is aggravated and one *Doṣa* is in normal state and one *Doṣa* in diminished state - 6 combinations)

Eka Doṣa Vṛddhi Sama Kṣaya

No.	*Vṛddhi*	*Sama*	*Kṣiṇa*
1	*Vāta*	*Pitta*	*Kapha*
2	*Vāta*	*Kapha*	*Pitta*
3	*Pitta*	*Vāta*	*Kapha*
4	*Pitta*	*Kapha*	*Vāta*
5	*Kapha*	*Vāta*	*Pitta*
6	*Kapha*	*Pitta*	*Vāta*

Dvandva Vṛddhi Kṣaya Ekasya-(two *Doṣās* are aggravated and one *Doṣa* is in the state of diminished - 3 combinations)

No.	*Vṛddhi*	*Kṣiṇa*
7	*Vāta*	*Kapha Pitta*
8.	*Pitta*	*Kapha Vāta*
9.	*Kapha*	*Vāta Pitta*

Eka Vṛddhi Dvayoḥ Kṣayaḥ (one *Doṣa* is aggravated and two are in a diminished state) - 3 combinations

No.	*Kṣaya*	*Vṛddhi*
10	*Kapha Pitta*	*Vāta*
11	*Kapha Vāta*	*Pitta*
12	*Vāta Pitta*	*Kapha*

Total number of *Doṣa Viklpa* are 62.

1. *Vṛddhi* (*Sannipāta* -13, *Saṁsarga* - 9, *Eka Doṣa*-3) = 25
2. *Kṣaya* (*Sannipāta* -13, *Saṁsarga* - 9, *Eka Doṣa*-3) = 25
3. *Vṛddhi Kṣaya and Sama Vikalpa* of *Doṣa*= 12

63 Combinations of *Doṣās* according to Aṣṭāṅga Hṛdaya

Doṣa Samyoga Bheda Triṣaṣṭi

वक्ष्यन्तेऽतः परं दोषा वृद्धिक्षयविभेदतः ।
पृथक् त्रीन् विद्धि संसर्गास्त्रिधा, तत्र तु तान्नव ॥
त्रीनेव समया वृद्ध्या षडेकस्यातिशायने ।
त्रयोदश समस्तेषु षड्द्वयेकातिशयेन तु ॥
एकं तुल्याधिकैः षट् च तारतम्यविकल्पनात् ।
पञ्चविंशतिमित्येवं वृद्धैः क्षीणैश्च तावतः ॥

A.H.Su 12/74-76

- The number of combination of *Doṣās* in their increased and decreased states will be enumerated.
- Individually, they are three.
- In the combination of two *Doṣās* in prominence, they are three; while in their *Vṛddhi* (increased state) they are again three and thus are nine in total, three in equal portion of increase and six, with preponderance of one *Doṣa*.
- In combination of all three jointly they are thirteen: six with predominance of any one *Doṣa*, one with equal predominance of all the three and six by disproportionate subdivisions.
- The *Doṣās* are 25 in respect of increase (*Vṛddhi*)
- The *Doṣās* are 25 in respect of decrease (*Kṣaya*)

एकैकवृद्धिसमताक्षयैः षट् ते पुनश्च षट् ।
एकक्षयद्वन्द्ववृद्ध्या सविपर्ययायाऽपि ते ॥

A.H.Su 12/77

- Each will make six numbers again in the combination of increase, normalcy and decrease of one *Doṣa*.
- They are again six in the combination of decrease of one *Doṣa* and increase of other two *Doṣās*.

भेदा द्विषष्टिर्निर्दिष्टाः त्रिषष्टिः स्वास्थ्यकारणम् ।

A.H.Su 12/78

Thus the number of combination is 62 and the cause of health is the 63rd combination.

परिधावमान दोष (Paridhāvamāna doṣa)

कुपितानां हि दोषाणां शरीरे परिधावतम्।
यत्र सङ्गः खवैगुण्याद् व्याधिस्तत्रोपजायते॥
S.S.Su 24/10

The vitiated *doṣās* circulates throughout the body and manifest disease in a deformed Srotas

It may be understood by following examples :

Ṛtu Kriyākāla

1. *Sañcaya*
2. *Prakopa*
3. *Prasama*

Vyādhi Kriyākāla

- *Sañcaya*
- *Prakopa*
- *Prasara*
- *Sthanasamsraya*
- *Vyakti*
- *Bheda*

Doṣa Gati

- *Ūrdhva*
- *Adah*
- *Tiryak*

Koṣṭa to sāka

- Movement of *doṣās* from *koṣṭa* to *sāka* and vice versa
- *Aśayāpakarṣa*

धातुस्थ दोषज विकार [Dhātustha Doṣaja Vikāra (Diseases of doṣās due to their entry into dhātus)]

Diseases manifest due to entrance of disturbed doṣās in the *dhātus* are as follows.

धातुस्थ वात दोषज विकार *(Dhātustha Vāta Doṣaja Vikār)*

Disturbed *vāta doṣa* create abnormalities in the *dhātus* are as follows :

वक्ष्यन्ते वातजास्तत्र निदाने वातरौगिके।
A.S.Su. 19/16

त्वचि स्फुटनरूक्षते।
रक्ते तीव्रा रुजः स्वापं तापं रागं विरर्णताम्॥
अरूंष्यन्नस्य विष्टम्भमरुचिं कृशतां भ्रमम्।
मांसमेदोगतो ग्रन्थीस्तोदाढ्यान्कर्कशान् भ्रमम्॥
गुर्वङ्गं चातिरुक्स्तम्भं मुष्टिदण्डहतोपमम्।
अस्थिस्थः सक्थिसन्ध्यस्थिशूलं तीव्रं बलक्षयम्॥
मज्जस्थोऽस्थिषु सौषिर्यमस्वप्नं स्तब्धतां रुजम्।
शुक्रस्य शीघ्रमुत्सर्गं सङ्गं विकृतिमेव वा॥
तद्गर्भस्थ शुक्रस्थः सिरास्वाध्मानरिक्तते तत्स्थः।
स्नायुअवस्थितः कुर्याद्गृध्रस्यायामकुब्जताः॥
वातपूर्णदृतिस्पर्शं शोफं सन्धिगतोऽनिलः।
प्रसारणाकुञ्चनयोः प्रवृत्तिं च सवेदनाम्॥
A.S.Ni. 15/11-17

त्वग्रूक्षा स्फुटिता सुप्ता कृशा कृष्णा च तुद्यते।
आतन्यते सरागा च पर्वरुक् त्वक्स्थितेऽनिले॥
रुजस्तीव्राः ससन्तापा वैवर्ण्यं कृशताऽरूचिः।
गात्रे चारूंषि भुक्तस्य स्तम्भश्चास्तृग्गतेऽनिले॥
गुर्वङ्गं तुद्यतेऽत्यर्थं दण्डमुष्टिहतं तथा।
सरुक् श्रमितमत्यर्थं मांसमेदोगतेऽनिले॥
भेदोऽस्थिपर्वाणां सन्धिशूलं मांसबलक्षयः।
अस्वप्नः सन्तता रूक् च मज्जास्थिकुपितेऽनिले॥
क्षिप्रं मुञ्चति बध्नाति शुक्रं गर्भमव्यापि वा।
विकृतिं जनयेच्चापि शुक्रस्थः कुपितोऽनिलः॥
बाह्याभ्यन्तरमायामं खल्लिं कुब्जत्वमेव च।
सर्वाङ्गैकाङ्गरोगांश्च कुर्यात् स्नायुगतोऽनिलः॥
शरीरं मन्दरुक्शोफं शुष्यति स्पन्दते तथा।
सुप्तास्तन्व्यो महत्यो वा सिरा वाते सिरागते॥
वातपूर्णदृतिस्पर्शः शोथः सन्धिगतेऽनिले।
प्रसारणाकुञ्चनयोः प्रवृत्तिश्च सवेदना॥
C.S.Ci. 28/30-37

Rasa dhātu– If disturbed *vāta* enters *rasa dhātu* it brings abnormalities in the skin such as cracks and roughness.

Raktadhātu– If disturbed *vāta* enters *rakta dhātu* it causes severe pain, loss of tactile sensation, hyper thermia, inflammatory changes, discolouration, ulceration, stasis of food inside the gastrointestinal tract for longer period, anorexia, emaciation and giddiness.

Māmsa dhātu and *medo dhātu*–If disturbed *vāta* enters *māmsa* and *medo dhātu* creates tumours which are very painful, hard and rough, giddiness, heaviness in the body, severe pain, stiffness and patient feels as if beaten by fist or baton.

Asthi dhātu–If disturbed *vāta* enters *asthidhātu* causes pain in the thighs, joints & bones, loss of strength.

Majjā dhātu–If disturbed *vāta* enters *majjā dhātu* causes hollowness in bones, loss of sleep and intermittent pain.

Śukra dhātu–If disturbed *vāta* enters *śukra* causes premature ejaculation, non elimination and abnormalities in the *śukra*, i.e. deformities in the embryo.

Indriya– If disturbed *vāta* enters sensory organs leading to loss of sensory functions.

Sirā–If disturbed *vāta* enters the *sirā* causes dilatation or emptiness.

Snāyu–If disturbed *vāta* enters the *snāyu* causes sciatica, tetanus, hunch back.

Sandhi–If disturbed *vāta* enters the *sandhi* causes swelling, which resembes like water filled bag on palpation and painful in extending and flexing.

Sarva śarira–If disturbed *vāta* localises all over the body produces pain like that of pricking, cutting, throbbing and breaking, stiffness, convulsion, loss of tactile sensation, contractions of the joints & tremors.

धातुस्थ पित्त दोषज विकार (*Dhātustha Pitta Doṣaja Vikār*)

Disturbed *pitta* if enters *dhātus* creates abnormalities in the *dhātus* are as follows–

पित्तं त्वचि स्थितं कुर्याद्विस्फोटकमसूरिकाः ॥
रक्ते विसर्पं दाहं च मांसे मांसपाककोथनम् ।
सदाहान्मेदसि ग्रन्थीन् स्वेदात्युद्गमनं तृषम् ॥
अस्थ्नि दाहं भृशं मज्ञि हारिद्रनखनेत्रताम् ।
पूतिपीतावभासं च शुक्रं शुक्रसमाश्रितम् ॥
सिरागतं क्रोधनतां प्रलापं स्रावगं तृषम् ।
कोष्ठगं मदतृड्दाहान् व्यापिनोऽन्यांश्चयक्ष्मणः ॥

A.S.Su. 19/16-19

Rasa dhātu–If disturbed *pitta* enters the skin i.e. *rasa* causes *viṣphoṭa* (small pox) and *masūṛikā* (chicken pox).

Rakta dhātu–If disturbed *pitta* enters the *raktadhātu* produces *visarpa* (herpes infections) and *dāha* (burning sensation).

Māmsa dhātu–If disturbed *pitta* enters the *māmsa dhātu* causes ulcers and putrification.

Medo dhātu–If disturbed *pitta* enters the *medo dhātu* causes burning sensation, tumours, excessive perspiration and thirst.

Asthi dhātu–If disturbed *pitta* enters *asthi dhātu* causes yellow discolouration of eyes and nails.

Śukra dhātu–If disturbed *pitta* enters the *śukra dhātu* produces bad smell and yellowish discolouration.

Sirā–If disturbed *pitta* enters the *sirā* produces anger and irrelevant speach.

Snāyu–If disturbed *pitta* enters the *snāyu* produces thirst.

Koṣṭha–If disturbed *pitta* enters the *koṣṭha* causes toxicity, thirst, burning sensation & many other symptoms.

धातुस्थ कफ दोषज विकार (*Dhātustha Kapha Doṣaja Vikār*)

Disturbed *kapha* if enters the *dhātus* causes following abnormalities.

श्लेष्मा त्वचि स्थितः कुर्यात् स्तम्भं श्वेतावभासताम् ।
पाण्ड्वामयं शोणितगो मांसस्थोऽर्बुदापचीः ॥
आर्द्रचर्मावनद्धाभगात्रतां चातिगौरवम् ।
मेदोगः स्थूलतां मेहमस्थ्नां स्तब्धत्वमस्थिगः ॥
मज्जगः शुक्लनेत्रत्वं शुक्रस्थः शुक्र सञ्चयम् ।
विबन्धं गौरवं चाति सिरास्थः स्तब्धगात्रताम् ॥
स्नायुगः सन्धिशून्यत्वं कोष्ठगो जठरोन्नतिम् ॥
अरोचकाविपाकौ च तांस्तांश्च कफजान् गदान् ।

A. S. Su. 19/20-24

Rasa dhātu or *tvak*–If disturbed *kapha* enters the skin causes stiffness and whitish discolouration.

Rakta dhātu–If disturbed *kapha* enters the *rakta dhātu* causes anaemia.

Māmsa dhātu–If disturbed *kapha* enters the *māmsa dhātu* causes malignant tumours, scrofula, patient feels as though body is covered with raw hide and feeling of heaviness.

Meda dhātu–If disturbed *kapha* enters *medodhātu* causes obesity & diabetes mellitus.

Asthi dhātu–If disturbed *kapha* enters the *asthi* *dhātu* causes loss of movement.

Majjā dhātu–If disturbed *kapha* enters the *majjā dhātu* produces whitish discolouration in the eyes.

Śukra dhātu–If disturbed *kapha* enters *śukra dhātu* causes more accumulation of *śukra* due to obstruction for its outflow, it becomes thick.

Sirā–If disturbed *kapha* enters the *sirā* causes stiffness in the body.

Snāyu–If disturbed *kapha* enters the *snāyu* causes pain in the joints.

Koṣṭha–If disturbed *kapha* enters *koṣṭha* causes enlargement of abdomen, anorexia, indigestion and many such abnormalities arises out of *kapha.*

क्रियाकाल (Kriyākāla)

Different stages of Paridhāvamāna Doṣa

The diagnosis and management in Ayurveda are based on clinical observation and assessment. Diagnosis at an early stage of the disease is emphasized, when abnormalities are vague and non-specific in the body. In current times, the diseases are diagnosed when pathological, biochemical manifestations have surfaced. However, at this stage, many times it is difficult to reverse the pathogenesis and restore the health of patient.

The concept of *kriyākāla* has been widely described in two separate entities as *ṛtu kriyākāla* and *vyādhi kriyākāla.*

1. Ṛtukriyākāla

Under *ṛtu kriyākāla* normal physiological variations of *doṣa* in respective season has been discussed and accordingly certain measures are described in *ṛtucarya* to overcome the adverse effects. Centuries ago *Acharya Caraka* has laid down the foundation stone, in terms of *Sañcaya*, *Prakopa* & *praśama*, that may be called as *Ṛitukriyākāla* or *prākṛta kriyākāla* . It is based on the theory of micro-macrocosm. There are minute differences between *Praśama* and *prasara* stage, it may lead to succeeded in respective stages in due course of time. In view of this *Caraka* has conceived the basic principles of pathogenetic events of diseases.

Doshic progression according to season

As per season, it includes 3 stages of doshic progression as mentioned below-

चयप्रकोप प्रशमा वायो ग्रीष्मादिषु त्रिषु ।
वर्षादिषु तु पित्तस्य श्लैष्मणः शिशिरा दिषु ॥
(H. Su.12/24-25)

Stages	***Vāta doṣa***	***Pitta doṣa***	***Kapha doṣa***
Caya	*Gṛṣma*	*Varṣā*	*Śiśira*
Prakopa	*Varṣā*	*Śarad*	*Vasanta*
Praṣama	*Śarad*	*Hemanta*	*Grīṣma*

Natural influencing factors of *Tṛidoṣa*

Vāta doṣa is naturally predominant/aggravated in following states:-

स शीताभ्रप्रवातेषु घर्मान्ते च विशेषतः ।
प्रत्यूषस्य पराह्ले तु जीर्णेऽन्ने च प्रकुप्यति ॥
(S.S.Su 21/20)

शीताभ्र - In cold climate.

प्रवातेषु-'प्रवाते इति प्रवातलक्षिते वर्षाकाले' i.e; In excessive Wind.

घर्मान्ते-घर्मान्ते वर्षाकाले i.e; In rainy season.

प्रत्यूषस्य - In late night.

अपरान्हे - In evening time.

जीर्णेऽन्ने - After digestion of food.

Pitta doṣa is naturally Predominant/aggravated in Following states:-

तदुष्णैरुष्णकाले च मेघान्ते च विशेषतः ।
मध्याह्ले चार्द्धरात्रे च जीर्यत्यन्ने च कुप्यति ॥
(S.S.Su 21/22)

उष्णै-उष्णैरिति उष्णात्वमत्रघर्मादि कृतम् - i.e; In excess exposure of sun.

उणकाले-उष्णकाले ग्रीष्मे - i.e; In summer season.

घर्मान्ते-घर्मान्ते शरदि - i.e; In *Śarada Ṛtu.*

मध्याह्ले - In mid-day.

अर्धरात्रे - In mid-night.

जीर्यत्यन्ने - During digestion of food.

Kapha doṣa is naturally Predominant/ aggravated in following states:-

स शीतैः शीतकाले च वसन्ते च विशेषः।
पूर्वाह्ने च प्रदोषें च भुक्तमात्रे प्रकुप्यति॥
(S.Su 21/24)

शीतैः - Intake of excessive cold foods or drinks.

शीतकाले – शीत काले इति हेमन्ते - i.e; In winter season like hemant ṛtu.

वसन्ते च विशेषतः - In vasanta ṛtu.

पूर्वाह्ने - At early morning.

प्रदोषे - At early night.

भुक्तमात्रे - After food intake.

1. Progression of doshas according to Vaya

Vaya	Prominent *Doṣa*
1. *Bālyāvasthā*	*Kapha Doṣa*
2.*Yuvāvasthā*	*Pitta Doṣa*
3. *Vṛddhāvasthā*	*Vāta Doṣa*

2. व्याधि क्रियाकाल (Vyādhi kriyākāla)

Vyādhi kriyākāla described by *Suśruta in 21 chapter of Sūtrasthāna,* after careful study of the inflammatory process of an open wounds (*vraṇa*) and conceptualized the natural history of disease evolution. He has given an idea about the consecutive stages of the disease and accordingly preventive measures taken to over come the disease & its complications. Early diagnosis of disease helps to cure the disease successfully without much discomfort in planning treatment. *Ayurveda* advocates that if the deranged dosha is checked or subdued in their primitive evolutionary phase (chayavastha), they may not be able to proceed with subsequent changes. If they left unresolved, they may gain strength and intensity. Therefore, good knowledge of the concept of *kriyakāla* is necessary for the recognition of the disease process at an early stage to arrest, its further developments.

Kriyākāla

The word *Kriyākāla* is made up of combination of two words:

Kriyā+Kāla

Where, the word *Kriyā* referes,

क्रियते अनेन असौअस्मिन्वा

(Śadbha Kalpa Druma)

Kriyā refers to *Karma* or action (*Cikitsā*) to the choice to measure *Bheṣaja i.e; auṣadha, āhāra* and *vihāra* with a view to eliminate and correct the *doṣika* disturbances thereby delaying the disease process. So "*Kriyākāla*", means the early recognition of the stage of process of disease and to plan appropriate theraupatics measures at respective stages.

संचयं च प्रकोपं च प्रसरं स्थानसंश्रयम्।
व्यक्तिं भेदं च यो वेत्ति दोषाणां स भवेद्भिषक्॥
(S.S.Sū 21/36)

Mainly 6 stages were described for the successive manifestation of the disease i.e. *Sañcaya, prakopa, prasara, sthānasaṁśraya, vyakti* and *bheda.*

संचयेऽपहृता दोषा लभन्ते नोत्तरा गतिः।
तेत्तु तुत्तरासु गतिसु भवन्ति बलवत्तराः॥
(S.S.Sū 21/36)

If accumulated *doṣa* has been eliminated it won't manifest successive stages of *kriyākāla*. If not eliminated, it passes to next stages. As the disease advances to latter stages it becomes stronger and stronger for management.

Sr.	Ayurvedic Term	Stage	State of Pathogenesis
1	*Sañcaya*	Accumulation of *doṣa* at own site	Sub clinical observations
2	*Prakopa*	Vitiation at own site	Sub clinical observations
3	*Prasara*	Spread out through body channels	Preclinical observations
4	*Sthān saṁśraya*	Localization at different sites	Pre monitory features
5	*Vyakti*	Manifestation	*Doṣa* specific general clinical manifestations
6	*Bheda*	Termination or Culmination	Differentiation, Aggression, Complications

संचय (Sañcaya)

संहतिरुपा वृद्धिश्चयः । *S.S.Sū 21/18 (Dalhaṇa)*

Gradual accumulation of *doṣa* in respective seats. It is the first stage of *Kriyākāla.*

चयो वृद्धिः स्वधाम्न्येव प्रद्वेषो वृद्धिहेतुषु विपरीतगुणेच्छा च॥
(A.H Su. 12/22)

Subject has aversion against the etiology of *Doṣa Sañcaya* and strong desires towards anti causes of *Sañcaya.*

एतानि खलु दोषस्थानानि; एषु संचीयन्ते दोषाः । प्राक् संचय हेतुरुक्तः । तत्र संचितानां खलु दोषाणां स्तब्धपूर्णकोष्टता पीतावभासता मन्दोष्मता चाङ्गानां गौरवमालस्यं चय कारण विद्वेषश्चेति लिङ्गानि भवन्ति तत्र प्रथम क्रियाकालः । *(S.S.Sū 21/18)*

Doṣa is going to accumulate in their respective seats and causes for accumulation of *doṣa* has been described else where in this book. Accumulated *doṣa* manifests certain symptoms are as follows.

वातसंचय लक्षण (Vāta Sancaya Lakṣaṇa)

Stiffness and fullness in abdomen

पित्तसंचय लक्षण *(Pitta Sancaya Lakṣaṇa)*

- Yellowishness of body parts
- Mild increase in body temperature

कफसंचय लक्षण *(Kapha Sancaya Lakṣaṇa)*

- Heaviness in whole body
- Lassitude

Person develops aversion towards the causative factors which are responsible for accumulation of *doṣa.*

2. प्रकोप (Prakopa)

विलयन रुपा वृद्धिः प्रकोपः ।
(S.S.Sū 21/18 (Dalhaṇa)

Accumulated *doṣa* moving to other sites other than its main site.

कोपस्तून्मार्गगामिता । लिङ्गानां दर्शनं स्वेषामस्वास्थ्यं रोगसम्भवः । (A.H.Su.12/23)

Doṣās which are previously accumulated and stagnated in their own sites tend to circulate to nearby sites.

प्रकोप प्रसरयोश्च को भेदः ? उच्यते स्थानस्य सर्पिषः क्वाथ्यमानस्य प्रथमं संचलनमात्रमेव प्रकोपः तस्यैव चातिक्वाथ्यमानस्य फेनमण्डलेनोत्सर्पता देशान्तर सरण मिव प्रसरः ।
(S.S.Sū 21/32 (Dalhaṇa)

What is the difference between *prakopa* and *prasara?* After heating thick *ghee* (solid ghee) it melts, it is the *prakopa* stage. On further heating of melted *ghee* produces froathing and reaches top of the heating utensil or comes out of utensil is called *prasara* stage.

Ācārya Dalhana has categorized *Prakopa* stage into two types viz. 1. *Caya Prakoa and* 2. *Acaya Prakopa.*

1. *Caya Prakopa*- In this state of accumulation, even though the *doṣās* are enhanced but they are not excited because of unfavorable condition once the circumstances are favourable then the *doṣās* exhibit the symptoms or excitation or aggravation. Generally excitations occurs only after the stage of *Caya* and hence if is called *Caya Pūrvaka prakopa.*

इति प्रायेणदोषाणां स्थानान्यविकृतात्मनाम् ॥

In this stage, doshas are abnormal/ aggravated in its own sites.

When *Caya* of *doṣa* occur it may lead to various complaints in human body.

2. *Acaya Prakopa*-It is the state in which *doṣa prakopa* occurs as an abrupt process without a preceding state of accumulation is known as *acaya pūrvaka prakopa.*

Causative factors for *acaya prakoa*-

1. Toxic substances
2. Allergic components
3. Powerful pathogenic organisms
4. Sudden abnormal climatic change
5. Affliction with poisoning
6. Excessive physical labour at a time- vitiate *Vāta doṣa*
7. Excessive anger at a time- vitiate *Pitta doṣa*
8. Excessive Day time sleep at a time- vitiate *Kapha doṣa*

तेषां प्रकोपात् कोष्टतोदसंचरणाम्लिका पिपासा परिदाहान्नद्वेष हृदयोत्क्लेदाश्च जायन्ते । तत्र द्वितीयः क्रियाकालः ।
(S.S.Sū 21/27)

The following symptomatology manifest in *prakopa* stage as per the involvement of *doṣa* are as follows-

वात प्रकोप लक्षण (Vāta Prakopa Lakṣaṇa)

- Pain and movement of *vāta* in *mahā srotas* (संचरणमिति कोष्ठे वात परिभ्रमणमित्यर्थः *(Dalhaṇa)*

पित्त प्रकोप लक्षण (Pitta Prakopa Lakṣaṇa)

- Sour eructations (अम्लीका आम्लोद्गरः)
- Burning sensation all over the body (परिदाहः सर्वतो दाहः)
- Excessive thirst

कफ प्रकोप लक्षण (Kapha Prakopa Lakṣaṇa)

- Aversion to food
- Excessive salivation in mouth (हृदयोत्क्लेदो हल्लासः)

3. प्रसर (Prasara Stage)

अत ऊर्ध्वं प्रसरं वक्ष्यामः तेषामेभिरातङ्कविशेषैः प्रकुपितानां किण्वोदकपिष्ट-समवाय इवोद्रिक्तानां प्रसरो भवति । तेषां वायुर्गतिमत्वात् प्रसरण हेतुः सत्यप्यचैतन्य । स हि रजो भूयिष्ठः रजश्च प्रवर्तकम् सर्वभावानाम् । यथा महानुदकसंचयोऽतिवृद्धः सेतुमवदार्यापरेणोदकेन व्यामिश्रः सर्वतः प्रधावति, एवं दोषाः कदाचिदेकशो द्विशः समस्ताः शोणितसहिता वाऽनेकधा प्रसरन्ति । तद्यथा वातः पित्तं श्लेष्मा शोणितं वातपित्ते वातश्लेष्माणौ, पित्तश्लेष्माणौ वातशोणिते पित्तशोणिते श्लेष्मशोणिते वातपित्तशोणितानि वातश्लेष्मशोणितानि, पित्तश्लेष्मशोणितानि वातपित्तकफाः वातपित्त कफशोणितानीति; एवं पञ्चदशा प्रसरन्ति । *(S.S.Sū 21/28)*

Overflowing of *doṣa* from their respective seats to other places takes place like fermented materials comes out after keeping mixture of yeast, water and flour in a vessel for overnight. Main factor for movement is *vāyu* because of being mobile even though *capricious*. It is predominant in *rajas* which is initiator of all happenings. As a large accumulation of water in excess breaks the barrier and mixes other pool of water and moves haphazardly in various directions. In the same way *doṣa* also moves to different places with the help of *vāyu* either alone or in combinations are as follows and it is of 15 types.

पञ्चदश प्रसर (15 types of Prasara)

1. *Vāta prasara*
2. *Pitta prasara*
3. *Kapha prasara*
4. *Rakta prasara*
5. *Vāta pitta prasara*
6. *Vāta kapha prasara*
7. *Pitta kapha prasara*
8. *Vāta rakta prasara*
9. *Pitta rakta prasara*
10. *Kapha rakta prasara*
11. *Vāta pitta rakta prasara*
12. *Vāta kapha rakta prasara*
13. *Pitta kapha rakta prasara*
14. *Vāta pitta kapha prasara*
15. *Vāta pitta kapha rakta prasara*

कृत्स्नेऽर्धेऽवयवे वाऽपि यत्राङ्गे कुपितो भृशम दोषो विकारंनभसि मेघवत्तत्र वर्षति । नात्यर्थं कुपितश्चापि लीनो मार्गेषु तिष्ठति निष्प्रत्यनीकः कालेन हेतुमासाद्य कुप्यति ।*(S.S.Sū 21/29-30)*

- Aggravated *doṣa* moves all over the body and manifest diseases wherever they struck i.e. whole body, half portion of the body, part of the body like cloud rains in sky.
- If the aggravation of *doṣa* is mild it may not produce diseases because it stays in hidden channels and produces diseases if preventive measures not undertaken and after consuming causative factors in excess.

एवं प्रकुपितानां प्रसरतां वायोर्विमार्गगमनाटोपौ ओष चोष परिदाह धूमायनानि पित्तस्य, अरोचकाविपाकाङ्गसादश्छर्दिश्चेति श्लेष्मणो लिङ्गानि भवन्ति; तत्र तृतीयः क्रियाकालः ।*(S.S.Sū 21/32)*

- Aggravated *doṣa* spreads to different places and produces following symptomatology are as follows-

वात प्रसर लक्षण (Vāta Prasara Lakṣaṇa)

- *Vāta* moves to different places other than its own seats. (प्रकृत वायुमार्गादन्यो विमार्गः)
- Painful sensation in ma eg उदरक्षोभः)

पित्त प्रसर लक्षण (Pitta Prasara Lakṣaṇa)

- Localised burning sensation (ओष एक देशिको दाहः)

- Sucking type of pain (चोषः चूष्यत इव वेदना विशेष)
- Burning sensation all over the body
- Emitting smoke from mouth (धूमायनं धूमोद्गमनमिव)

कफ प्रसर लक्षण (Kapha Prasara Lakṣaṇa)

- Anorexia
- Indigestion
- Lassitude
- Vomiting

4. स्थानसंश्रयावस्था (Sthānasaṁśraya stage)

कुपितानां हि दोषाणां शरीरे परिधावताम्।
यत्र सङ्गःखवैगुण्याद्व्याधिस्तत्रोपजायते ॥

(S.Su. 24/ 10)

प्रसृतानां पुनर्दोषाणां स्त्रोतोवैगुण्याद्यत्र सङ्गः स स्थानसंश्रयः।

(S.S.Su 24/10 (Dalhaṇa)

Aggravated *doṣa* spreads to different places and struck somewhere because of obstruction in *srotas* due to abnormality in *srotas* is called *sthāna samśraya.*

अत ऊर्ध्वं स्थानसंश्रयं वक्ष्यामः । एवं प्रकुपितास्तांस्तान् शरीरप्रदेशानागम्य तांस्तान् व्याधीन् जनयन्ति ।ते यदोदर सन्निवेशं कुर्वन्ति तदा गुल्मविद्रध्यु-दराग्निसङ्गानाह विसूचिकातिसार प्रभृतीञ्जनयन्ति; बस्तिगताः प्रमेहाश्मरीमूत्राघात मूत्रदोष प्रभृतीन्; मेढ्रगता निरुद्धप्रकशोपदंश शूकदोष प्रभृतीन्; गुदगता भगन्दरार्शः प्रभृतीन्; वृषणगता वृद्धीः; ऊर्ध्वजत्रुगतास्तुर्ध्वजान्; त्वङ्मांस-शोणितस्थाः क्षुद्ररोगान् कुष्ठानि विसर्पांश्च; मेदोगता ग्रन्थ्यपच्यर्बुदगल-गण्डालजी प्रभृतीन्; अस्थिगता विद्रध्यनुशयी प्रभृतीन्; पादगताः श्लीपदवातशोणित वातकण्टक प्रभृतीन्; सर्वाङ्गगता ज्वर सर्वाङ्गरोग प्रभृतीन्; तेषामेवामभि संनिविष्टानां पूर्वरुप प्रादुर्भावः; तं प्रतिरोगं वक्ष्यामः ।तत्र पूर्वरुपगतेषु चतुर्थः क्रियाकालः ॥

(S.S.Sū 21/33)

Aggravated and disturbed *doṣa* moving all over the body and produces diseases when favourable environment was developed for *doṣa-dūṣya sammūrchanā* due to unheathiness of *srotas* in a particular site resuting into manifestation of diseases.

- ***Udara-*** *Doṣa-dūṣya sammūrchana* in *udara* manifests
- Following diseases-*Gulma, Vidradhi, Udara roga, Agni Vikāra, Vibandha, Ānāha, Visūcikā, Atisāra, Pravāhikā, Vilambika* etc.
- ***Vastigata-*** When there is a *doṣa-dūṣya sammūrchana* in *basti* region produces following diseases-*Prameha, Aśmarī, Mūtrāghāta, Mūtra doṣa* etc.
- ***Meḍhṛagata-*** *Doṣa-dūṣya sammūrchanā* in *medhra pradeśa* manifests following diseases-*Niruddhaprakaśa, Upadaṁśa, Śūka doṣa* etc.
- ***Gudagata-*** *Doṣa-dūṣya sammūrchana* in *guda* region manifests following diseases-*Bhagandara, arśa etc.*
- ***Vṛṣaṇagata-*** *Vṛddhi* disease manifests.
- ***Ūrdhvajatrugata-*** Manifest *ūrdhvajatru gata vikāra.*
- ***Tvak Māmsa* and *Śonitagata***

त्वक् शब्देनात्र रसो विवक्षितः *(Dalhaṇa)*

Rasa is considered in place of *tvak* because any changes happening in *rasa* are expressed in skin. Diseases are-*Kṣudraroga, Kuṣṭha, Visarpa* etc.

- ***Medagata-*** Diseases are-*Granthi, apaci, arbuda, Galagaṇḍa, Alaji* etc.
- ***Asthigata-*** Diseases are-*Asthi vidradi, Asthimajjāgata vāta* etc.
- ***Pādagata-*** Diseases are-*Ślīpada, Vātaśoṇita, Vātakanṭaka* etc.
- ***Sarvāngagata-*** Diseases are- *Jvara, Vāta-vyādhi, Prameha, Pāṇḍu roga, Śoṣa* etc.

Outcome of Sthānsansraya stage-

1. Genesis of *Kha-vaiguṇya*
2. *Doṣa-Duṣya Sammūrchhanā* occurs.

स्थान संश्रयिणः क्रुद्धाभाविव्याधि प्रबोधकम् दोषाः कुर्वन्ति यल्लिङ्गं पूर्व रूपं तदुच्यते।

(Chakrapani on S.S.Sū 21/37)

3. Genesis of prodromal symptoms.
4. In this particular stage of *kriyākāla* premonitory signs and symptoms of the diseases are seen.

5. व्यक्तावस्था (Vyaktāvastha)

अत ऊर्ध्वं व्याधेर्दर्शनं वक्ष्यामः–शोफार्बुदग्रन्थिविद्रधि-विसर्पप्रभृतीनां प्रव्यक्तलक्षणता, ज्वरातिसार-प्रभृतीनाञ्च ।तत्र पञ्चमः क्रियाकालः ॥*(S.S.Sū 21/34)*

व्यधिः प्रव्यक्तं रूपं व्यक्तिः । *S.S.Sū 21/34 (Dalhaṇa)*

प्रव्यक्त लक्षणता व्याधीनां व्यक्तिरित्यर्थः ।

(Chakrapani on S.S.Sū 21/33)

In this stage, disease is seen fully developed and clear cut symptoms are observed is called as *Vyakti kriyākāla*.

- In this stage following things are clearly seen likes.
- Completion of *doṣa-dūṣya sammurchana.*
- Srotodushti.
- Cardinal & general symptoms of Disease.

For example-

संताप लक्षणो ज्वरः- Increased temperature is observed in *jvara*.

सरण लक्षणोऽतिसारः- Excessive passing of watery stools is seen in *atisāra.*

पूरण लक्षण मुदरमिति- Abnormal enlargement of abdomen is observed in *udara roga.*

चिकित्सा *(Cikitsā)*

अत्र व्याधेः प्रत्यनीकैव चिकित्सा ।

S.S.Sū 21/34 (Dalhaṇa)

Vyādhi pratyanīka cikitsā (treatment based on diseases) may be adopted.

6. भेदावस्था (Bhedāvastha)

अत ऊर्ध्वमेतेषामवदीर्णानां व्रणभावमापन्नानां षष्ठः क्रियाकालः, ज्वरातिसार प्रभृतीनां च दीर्घकालानुबन्धः । तत्रा प्रतिक्रियमाणोऽसाध्यतामुपयान्ति । *(S.S.Sū 21/35)*

- In case of *vṛṇās* they burst and become ulcers.
- Certain diseases attain chronicity i.e. *Jirṇa jvara, pravṛddha āmavāta* etc.

***Dīrghakālānubandha* refers to two meaning i.e.-** In this stage specific signs and symptoms of the diseases manifests like *vātaja jvara lakṣaṇa, pittaja jvara lakṣana* etc. and also it refers to chronicity of the diseases. This particular stage of manifestation is very difficult to cure and if not treated at the earliest disease may become incurable and develops complications.

Importance of Knowledge of Kriyākāla

Kriyākāla is defined as the therapeutics where in which treatment principles advised as per stages of the disease. It gave more emphasis to start the treatment at the earliest after observing the variations in the *doṣās* so that it helps to prevent the manifestation of disease or helps to prevent the complications of the disease.

साध्योऽयमिति यः पूर्वं नरो रोगमुपेक्षते ।
स किंचित्कालमासाद्य मृत एवावबुध्यते ॥
यस्तु प्रागेव रोगेभ्यो रोगेषु तरुणेषु वा ।
भेषजं कुरुते सम्यक् स चिरं सुखमश्नुते ॥
यथा ह्यल्पेन यत्नेन छिद्यते तरुणस्तरुः ।
स एवातिप्रवृद्धस्तु छिद्यतेऽतिप्रयत्नतः ॥
एवमेव विकारोऽपि तरुणः साध्यते सुखम् ।
विवृद्धः साध्यते कृच्छ्रादसाध्यो वाऽपि जायते ॥

(C.S.Ni. 5.12-15)

The one who neglects the disease in the beginning thinking it as curable is regarded as if dead after a lapse of time. The individual who resorts to remedial measures prior to the disease or in its early stage, enjoys happiness for long as a young tree can be cut with little effort but the same require a great effort when the tree is well grown, so also, the disease is easily curable in its primary stage while the much advanced one is cured with difficulty or becomes incurable.

Timely implementation of proper therapeutic measures are well described under *Kriyakāla*.

Importance of Kriyākāla

If a physician to detect the abnormal signs & symptoms of *doṣās* in the accumulation stage of disease and advocates the treatment principle, then the disease will not progress to next stage.

ज्ञानबुद्धिप्रदीपेन यो नाविशति तत्त्ववित् ।
आतुरस्यान्तरात्मानं न स रोगांश्चिकित्सति ॥

(C.S.Vi. 4/12)

The one who is well versed in the knowledge of the disease and its treatment but does not enter into the inner self of the patient by virtue the light of his knowledge and intelligence, can't treat disease successfully.

- *Kriyākāla* helps to detect one early changes in the components of disease i.e. *Doṣa, Dūṣya* etc.
- It also helps to understand the progress of

diseases as well as to plan suitable preventive measures.

- Strength of the disease is mild to moderate initially but delay in the understanding the disease at the earliest leading to development of disease having severe strength of disease.
- Knowledge of *Kriyākāla* assist the physician to prevent the disease at the earliest and helps to prevent the actual manifestation of disease.

आतुरावस्थास्वपि तु कार्याकार्यं प्रति कालाकालसंज्ञा; तद्यथा-अस्यामवस्थायामस्य भेषजस्याकालः, कालः पुनरन्यस्येति; एतदपि हि भवत्यवस्थाविशेषेण; तस्मादातुरावस्थास्वपि हि कालाकालसंज्ञा। तस्य परीक्षामुहुर्मुहुरातुरस्य सर्वावस्थाविशेषावेक्षणं यथावद्भेषज-प्रयोगार्थम्। न ह्यतिपतितकालमप्राप्तकालं वा भेषजमुपयुज्यमानं यौगिकं भवति; कालो हि भैषज्यप्रयोगपर्याप्तिमभिनिर्वर्तयति॥

(*C.S.Vi. 8.128*)

Time or *Kāla* is the state of the patient which determines the initiation of timely actions and prohibition of untimely ones. In certain conditions one drug is untimely and the other one is timely. This is also due to specific condition, hence nomenclature of *Kāla* (timely) is given to the condition of the patient. To ascertain this with a view to administering the therapy, the specific characteristics of all the states of the patient should be observed again and again. The therapy does not produce its desired effect, if administered after the passage or before the arrival of the correct time. It is the time which determines the manifestation of the desired effects of a therapy administered.

अप्राप्ते वा क्रियाकाले प्राप्ते वा न कृता क्रिया।
क्रिया हीनाऽतिरिक्ता वा साध्येष्वपि न सिध्यति॥

(*S.S.Sū. 35/21*)

Treatment done prior to the time, or treatment not initiated at the proper time and treatment being either inadequate or in excess, these do not succeed even in curable diseases.

शीते शीतप्रतीकारमुष्णे चोष्णनिवारणम्।
कृत्वा कुर्य्यात् क्रियां प्राप्तां क्रियाकालं न हापयेत्॥

(*S.S.Sū. 35/21*)

During cold seasons treatment should be opposite of it and during hot season, it should be to remove the heat, management therapeutics required at different stages of activities should not be passed over.

Treatment principles mentioned in *Dalhaṇa* according to stages are as follows-

(i) *Sancaya*- Primary or initial stage to plan suitable preventive measures.
(ii) *Prakopa*- Second stage for preventive measures.
(iii) *Prasara*- *Hetu-liṅga cikitsā* i.e. treatment aimed at etiology & symptoms of *doṣās*.
(iv) *Sthānasaṁśraya*- Treatment must be employed to *Doṣa, Dūṣya* or both.
(v) *Vyakti* or *Vyaktāvasthā*- *Vyādhi pratyanika cikitsā* i.e. treatment strategies mentioned under various disease to be followed.
(vi) *Bhedāvasthā*- Treatment of the main disease or complication depending on their strength.

Six stages of disease evaluation and therapeutic intervention

Stages	***1. Sañcaya***	***2. Prakopa***	***3. Prasara***	***4. Sthāna Saṁśraya***	***5. Vyakta***	***6. Bheda***
Management	Health conservation	Pacification of morbid factors	Care of microchannels	Early diagnosis and treatment	Disease specific, limit disabilities disability and rehabilitation	Seize complication, restore
Manifestation	Tiredness Burning Fullnesss	Heaviness, Inflammation, Pain	Nausea, belching, rumbling (Guda-guda sound)	Prodromal symptoms	Disease specific symptoms	Complications, disability, Death
Associate	*Doṣa*	*Doṣa*	*Doṣa*, blood	Microchannels	Tissues	*Ojas*
Location	GI	GI	Blood vessels	Tissues	Organs	Vital organs

संसर्गज (Samsargaja)

The combination of *Doṣa* in association of *Rasādi dhātus* manifest innumerable number of diseases

संसर्गाद्रसरुधिरादिभिस्तथैषां दोषांस्तु क्षयसमताविवृद्धिभेदैः ।
आनन्त्यं तरतमयोगतश्च याताञ् जानीयादवहितमानसो यथास्वम् ॥
A.H.Su 12/78

The combination of *Doṣās and Rasādi dhātus* manifest innumerable number of diseases due to their decrease, homeostasis, and increase. Physician must attentively observe the disproportionate greater and lesser increase and decrease of *doṣa* and *dūṣya* by monitoring their features, indications and symptoms.

संसर्गज एवं सन्निपातज (Samsargaja and sannipātaja)

शंसर्गः सन्निपातश्च तद्विवत्रिक्षयकोपतः। *A.H.Su. 1/12*

स0-एतदुक्तं भवति । द्वयोः स्वप्रमाणाधिकयोः क्षीणयोर्वा संयोगः संसर्गः। त्रयाणां दोषाणां वृद्धानां क्षीणानां वा संयोगः सन्निपातः। (सर्वाङ्गसुन्दरी व्याख्या कृत)

संसर्गज दोष दुष्टि (Samsargaja doṣa duṣṭi)

Combination of two *doṣās*.

सम सन्निपातज (Sama sannipātaja)

Combination of three *doṣās* in equal proportion

विषम सन्निपातज (Viṣama sannipātaja)

Combination of three *doṣās* in unequal proportion

संसर्गज विकार (*Saṁsargaja Vikāra*)

Diseases may manifest by involving two or more *doṣa* is called *saṁsargaja*. *Doṣa* may unite with *dhātu, mala* etc. and manifest various diseases and accordingly nomenclature was given.

For Example–

Vātādi doṣa + Rasadhātu → Jvara
Vātādi doṣa + Rasadhātu + Puriṣa → Atisāra
Vātādi doṣa + Rasādi duṣya + Mūtra → 20 types of *Prameha*
Vātādi doṣa + Raktadhātu → Vātarakta, Raktapitta, Vidradhi, Rakta Gulma
S.Su. 24/8 (Dalhaṇa)

लीन दोष (*Līna doṣa*)

लीनमिति अनुत्क्लिष्टम् । *(C.S.Ci. 15-75) (Cakrapāṇī)*

लीनान-श्लिष्टान्, अनुत्क्ल्ष्टान् स्वस्थानाद ।
चलितान्, न निर्हरेत्-वमनादिभिर्न शोधयेत् ॥
(A.H.Sū. 13-28 Sarvāṅgsundara)

व्याप्त देहात् धातुलीनात् अनुत्क्लिष्टान् ।
सामान् न शोधयेत् ॥
(A.H.Sū. 13-28 Hemādri)

Doṣās accumulated secretly in the *Dhātus* (hide or move around secretly)

लीना असम्यग्दर्शितः । *(S.S.U.H. 65.6 (Dalhaṇa)*

लीनत्व–एकदेशस्थितत्वम् । *(S.S.U.H. 39.65)*

धात्वन्तरस्थो लीनत्वान्न सौक्ष्म्यादुपलभ्यते ।
अल्पदोषेन्धनः क्षीणः क्षीणेन्धन इवानलः ॥
(S.S.Utt. 39.65)

Fever lurks inside the *dhātus* in minute form (less quantity of *doṣās*) just like a spark of fire with little of fuel. During *līna doṣa* conditions *doṣās* reman localised in one placed and does not exhibit prominent features.

लीनं पक्वाशयस्थं वाऽऽप्यामं स्राव्यं सदीपनैः ।
शरीरानुगते सामे रसे लङ्घनपाचनम् ॥
(C.S.Ci. 15-75)

If the *Āma* is hidden or situated in intestines, then the patient should be given purgations mixed with appetizers.

सर्वदेहप्रविसृतान् सामान् दोषान् न निर्हरेत् ।
लीनान् धातुष्वनुत्क्लिष्टान् फलादामाद्रसानिव ॥
आश्रयस्य हि नाशाय ते स्युर्दुर्निर्हरत्वतः ।
(A.H.Sū. 13.28-29)

The *Sāma doṣās* which are spread all over the body, which are lurking in the *dhātus* and which are not moving out of their places should not be forcibly expelled by purificatory therapies like emesis, purgation etc. Just as attempts at taking out the juice from an unripe fruit leads to the destruction of the dwelling place itself, so also it will be very difficult to expel them out.

संश्लेषः परिच्छेद दोष (Samśleṣa and Pariccheda doṣa)

Is *doṣa* vitiation permanent or temporary one?

भूयोऽत्र जिज्ञास्यं, किं वातादीनां ज्वरादीनाञ्च नित्यः संश्लेषः परिच्छेदो वा ? इति । यदि नित्यः संश्लेषः स्यात्तर्हिं नित्यातुराः सर्व एव प्राणिनः स्युः । अथाप्यन्यथा वातादीनां ज्वरादीनां चान्यत्र वर्त्तमानानामन्यत्र लिठं न भवतीति कृत्वा यदुच्यते वातादयो ज्वरादीनां मूलानीति; तन्न । अत्रोच्यते-दोषान् प्रत्याख्याय ज्वरादयो न भवन्ति; अथ च न नित्यः संबन्धः; यथाहि विद्युद्वाताशनि-वर्षाण्याकासं प्रत्याख्याय न भवन्ति, सत्यप्याकाशे कदाचिन्न भवन्ति, अत च निमित्ततस्तत एवोत्पत्तिरितिः ततरङ्गबुद्बुदा-दयश्चोदकविशेषा एव; वातादीनां ज्वरादीनां च नाप्येवं संश्लेषो न परिच्छेदः शाश्वतिकः, अथ च निमित्तत एवोत्पत्तिरिति ॥

S.S.Su. 24/11

- There is a curiosity to understand the relation between *Vātādi Doṣās* and jvaradi diseases is a permanent (constant, inseparable) one or is it separable (temporary) one?
- If it is a permanent one, then all living beings should be suffering from disease all the time.
- Since all living being are not suffering from disease always and and if so then there should be exhibition of signs and symptoms but that does not happen.
- Therefore to say that for *Jvarādi Vyādhi Vātādi Doṣās* is the root cause may seem inappropriate.
- This query seems to be incorrect because there will be no constant association between *Jvarādi Vyādhi* and *Vātādi Doṣās* and it is not an eternal relationship. Just like how lightening, storm and rain are not constantly associated with sky, even though sky permanently exists and they (lightening, storm and rain) are seen with a cause and also just like the ripples and bubbles produced in the water under specific circumstances similarly the association and disassociation between *Vātādi Doṣa* and *Jvarādi Vyādhi* also is not permanent. They only get associated under specific conditions due to an exciting cause.

CHAPTER

7

Doshagati and Rogamarga

Prof. Parameswarappa S. Byadgi and Dr. Ramanand Tiwari

दोष चय प्रकोप प्रशमा (Doṣa caya, Prakopa evam Praśama etc.)

Doṣa gati is a condition characterized by variation in the sites of *doṣās* depending on the unequilibrium and equilibrium state of *doṣās*. Equilibrium state of *doṣās* refers to *doṣās* are present in their own site and performing normal functions. Unequilibrium state of *doṣās* is a condition, which develops due to hypo or hyper state of *doṣās*.

क्षयः स्थानं च वृद्धिश्च दोषाणां त्रिविधा गतिः ।
ऊर्ध्वं चाधश्च तिर्यक्च विज्ञेया त्रिविधाऽपरा ॥
त्रिविधा चापरा कोष्ठ शाखामर्मास्थिसन्धिषु ।
इत्युक्ता विधिभेदेन दोषाणां त्रिविधा गतिः ॥
चयप्रकोपप्रशमाः पित्तादीनां यथाक्रमम् ।
भवन्त्येकैकशः षट्सु कालेष्वभ्रागमादिषु ॥

C.Su 17/112-114

Doṣās attain abatement, normalcy and exaggeration state depending on exposure to various factors. Aggravated *doṣās* manifest upward, downward and oblique movement inside the body and manifest condition like vomiting, epistaxis, diarrhoea etc.. Agitated and excacerbated *doṣā* moves to *koṣṭha* (gastro intestinal tract), *śākhā* (extremities) and *marmāsthi sandhi* (vital organs and joints).

Accumulation, agitation and pacification of *doṣa* in respective seasons is a natural phenomenon and doesn't manifest diseases. But on the contrary if it attains 6 stages of *vyādhi kriyākāla* then only disease manifests.

स्वस्थातुर सामान्येन वातादीनां त्रिधागतिः । तत्रातुराणां वातादेः क्षयश्च वृद्धिश्च क्षयवृद्धि उभयम् । क्षयवृद्धिसहचरस्थानञ्चेति चतुर्द्धाऽपि त्रिधैव, ततो नातिरेकात् । स्वस्थानान्तु स्थानं साम्यमेवेत्यर्थः तात्पर्यतो व्याख्येयः । तत्र क्षयस्त्ववयवापचयः, न च ध्वंस एव । स्थानं समत्वेनावस्थानम् , वृद्धिरव-यवोपचयः ।

C.Su 17/112-114 (Gaṅgādhara)

Including *svastha* and *ātura* 3 types of movements are described for *vātādi doṣa*. In patients 3 kinds of *gati* are described namely *kṣaya-vṛddhi* (hypo-hyper) state of *doṣās*. Normal state of *doṣās* does not come under patient. *Kṣaya* state refers to depletion or diminished state of *doṣa*, but it doesn't destroy the body. *Sthāna* means normal state of the *doṣa*. *Vṛddhi* means exaggeration or excacerbation of *doṣās*.

Nidāna (Etiological factors)

The following etiological factors are described for the movement of *doṣa* from *koṣṭha* to *śākhā* and vice versa.

Movement of Doṣa from Koṣṭha to Śākhā

व्यायामदूष्मणस्तैक्ष्ण्याद्धितस्यानवचारणात् ।
कोष्ठाच्छाखा मला यान्ति द्रुतत्वान्मारुतस्य च ॥
तत्रस्थाश्च विलम्बन्ते कदाचिन्न समीरिताः ।
नादेशकाले कुप्यन्ति भूयो हेतुप्रतीक्षिणः ॥

C.Su 28/31-32

Doṣās move from *koṣṭha* to *śākhā* by following etiological agents.

- Excessive exercise
- Excess heat or increased warmthness
- Intake of penetrating foods & drinks
- Consumption and adoptation of unwholesome food and activities
- Power of *vāta* with pressure to expels the *doṣās* from *kosthā* to *śākhā*

In the absence of exciting cause, these vitiated *doṣa* at times remain in quiscent stage until they are exposed to favourable time and place. These vitiated *doṣa* may manifest their effects after getting suitable time and place. However, strongly aggravated *doṣās* do not remain in quiscent stage but manifest their effects immediately.

Movement of Doṣās from Śākhā to koṣṭha

वृद्ध्या विष्यन्दनात् पाकात् स्रोतोमुखविशोधनात् शाखा मुक्त्वा मलाः कोष्ठं यान्ति वायोश्च निग्रहात् । *C.Su 28/33*

Doṣa moves from *śākhā* to *koṣṭha* by following process–

- Excacerbation of *doṣās.*
- Liquification of pathogenetic factors
- Suppuration
- Cleansing of *Srotasas*
- Control over *vāta doṣa*

रोगमार्ग (Roga mārga)

त्रयो रोगमार्ग इति शाखा, मर्मास्थि सन्धयः
कोष्ठश्च । *C.Su 11/48*

Three kinds of *Roga mārgās* are mentioned namely *śākhā, marmāsthi sandhi* and *koṣṭha.*

शाखा मार्ग या बाह्य रोगमार्ग (Śākhā mārga or bāhya Roga mārga) (External path of disease)

तत्र शाखा रक्तादयो धातवस्त्वक् च, स बाह्यो रोगमार्गः ।
C.Su 11/48

Śākha mārga includes diseases of *raktādi dhātus* and *tvak* and it is also called *bāhya Roga mārga. Raktādi* means *māmsa, meda, asthi, majjā, śukra.*

शाखा रक्तादयः षड् धातवस्त्वक् चेति सप्तको एको मार्गाः ।
C.Su 11/48 (Gaṅgādhara)

Śākhā includes 6 *dhātus* and *tvak,* all the seven are included in one path i.e. *bāhya Roga mārga.*

त्वक् चेति पृथक पदेन त्वग्गतरसश्चोप लक्ष्यते ।
C.Su 11/48 (Gaṅgādhara)

The word *tvak* (skin) has been designated because any changes in the *rasa* are expressed in skin.

एष बाह्यरोगमार्ग एकः । सुखसाध्यत्व ख्यापन्नार्थ मेतदुपदेशः ।
C.Su 11/48 (Gaṅgādhara)

Almost all the diseases which arise out of *bāhya Roga mārga* are easy to cure.

Diseases

तत्र गण्डपिडकालज्यपचीचर्मकीलाधिमांस मषक कुष्ठव्यङ्गादयो विकारा बहिर्मार्गजाश्च विसर्पश्वयथु गुल्मार्शो विद्रध्यादयः शाखानुसारिणो भवन्ति रोगाः । *C.Su 11/49*

The following diseases are considered under *bāhya Roga mārga.*

गण्डो व्रणशोथो न च गलगण्डः । *(Gaṅgādhara)*

- *Gaṇḍa* (Inflammatory reaction)
- *Piḍakā* (Pimple)
- *Alaji* (Boil)
- *Apaci* (Scrofula)
- *Carmakila* (Sentinel pile)
- *Adhimāmsa* (Granuloma)
- *Maṣaka* (Moles)
- *Kuṣṭha* (Various dermatological disorders including leprosy)
- *Vyaṅga* (freckles)

Extrenal variety of :

- *Visarpa* (Herpes infections)
- *Śvayathu* (Oedema)
- *Gulma* (abdominal growths)
- *Arśa* (haemorroides)

1 *Vidradhi* (External abscess)

- *Ajagallikā* (Skin disorders)
- *Gaṇḍālaji* (Diseases of face)

मध्यम रोगमार्ग या मर्मास्थिसन्धि रोग मार्ग (Madhyama Roga or marmāsthi sandhi Roga mārga) (Internal path of disease)

मर्माणि पुनर्बस्ति हृदयमूर्धादीनि, अस्थिसन्धयोऽस्थि-संयोगास्तत्रोप निबद्धाश्च स्नायु कण्डराः, स मध्यमो रोगमार्गाः ।
C.Su 11/48

1. Diseases of vital organs like *basti, hṛdaya, mūrdhā* are included under *madhyama Roga mārga.*
2. Diseases of *asthi, sandhi, asthi* related structures, *snāyu* and *kanḍara* are comes under *madhyama Roga mārga.*

मध्यममार्गत्व वचनेन तद् रोगाणां कृच्छ्रसाध्यत्वं ख्यापितम् ।
C.Su 11/48 (Gaṅgādhara)

Madhyama Roga mārga diseases are difficult to cure.

Diseases

पक्षवधग्रहापतानकार्दितशोष राजयक्ष्मास्थिसन्धिशूल-गुदभ्रंशादयः शिरोहृद्वस्ति रोगादयश्च मध्यममार्गानुसारिणो भवन्ति रोगाः । *C.Su 11/49*

- *Pakṣavadha* (Hemiplegia or stroke)
- *Pakṣagraha* (Tonic convulsions)
- *Apatānaka* (Clonic convulsions)

- *Ardita* (facial paralysis or bell's palsy)
- *Śoṣa* (Consumption)
- *Rājayakṣmā* (Pulmonary tuberculosis)
- *Asthi śūla* (Pain in bones)
- *Sandhi śūla* (Pain in joints)
- *Guda bhraṁśa* (Prolapse of rectum)
- *Hikkā* (Hiccough)
- Diseases of *śira* (head), *hṛdaya* (heart), *basti* (bladder)

आभ्यन्तर या कोष्ठमार्ग (Ābhyantara or koṣṭha mārga) (Internal path of the disease)

कोष्ठः पुनरुच्यते महास्रोतः शरीरमध्यं महानिम्नमामपक्वाशयश्चेति पर्याय शब्दैस्तन्त्रे, स रोगमार्ग आभ्यन्तरः ।

C.Su 11/49

Koṣṭha mārga is also known as *mahā Srotas* (gastro intestinal tract), *śarira madhya* (central portions of the body), *mahānimna* (deep or internal part of the body), *āma-pakvāśaya* (stomach & intestines). It is also called *ābhyantara Roga mārga* (Internal path of the disease).

Other synonyms mentioned by *Gaṅgādhara* are as follows–*udara, mahāsaraṇischidra, mahāgarta.*

Prognosis of Internal Path of Diseases

स आभ्यन्तरौ रोगमार्गस्तृतीयः । य एतन्मार्गगतरोगाणां सुखदुःखयाप्या साध्यत्वं यथा लक्षणं भवतीति ख्यापितम् ।

C.Su 11/48 (Gaṅgādhara)

It is the third path of disease and prognosis of internal path of diseases become either curable or difficult to cure or manageable or incurable disease depending on their manifestations.

Diseases

ज्वरातिसारच्छर्द्यलसकविसूचिका कास श्वासहिक्कानाहोदरप्लीहादयोऽन्तर्मार्गजाश्च विसर्पश्वयथु गुल्मार्शोविद्रध्यादयः कोष्ठानुसारिणो भवन्ति रोगाः । *C.Su 11/49*

- *Jvara* (Fever)
- *Atisāra* (Diarrhoea)
- *Chardi* (Vomiting)
- *Alasaka* (Internal torper)
- *Visūcikā* (Choleric diarrhoea)
- *Kāsa* (Cough)
- *Śvāsa* (Dyspnoea)
- *Hikkā* (Hiccough)
- *Ānāha* (Constipation)
- *Udara* (Diseases of the abdomen)
- *Plīhā* (splenic disorders)

Internal variety of :

- *Visarpa* (Herpes infections)
- *Śvayathu* (Oedema)
- *Gulma* (Internal abdominal growths)
- *Arśa* (Piles)
- *Vidhradhi* (Internal abscess)

Conclusion

External path of the disease includes *raktādhi* 6 *dhātus* and *tvak*. The term *śākhā* has been used to illustrate the nature of tissue elements like blood etc. which are like a branch of a tree. The *tvak* (skin) includes *rasa* because any changes in the *rasa* are expressed in skin. The *rakta* belonging to liver and spleen may be included under internal path because *suśruta* included liver and spleen as *koṣṭhāṅga.*

The main purpose behind explanation of path is that in order to facilitate the prognosis of the disease and also to identify the various path to plan the treatment accordingly.

CHAPTER

8

Srotodusti

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सामान्य स्त्रोतो दुष्टि निदान एवं लक्षण (Sāmānya Sroto Duṣṭi Nīdān Evam Lakṣaṇa)

The word *Srotas* derived from *'sru' gatau dhātu*, which means movement.

Definition and Importance of Srotas

स्त्रवणात् स्त्रोतांसि । *C.Su 30/12*

It is the path helps for transfortation of substances is called *Srotas*.

स्त्रवणादिति रसादेरेव पोष्यस्य स्त्रवणात् ।
C.Su 30/12 (Cakrapāṇi)

Nutrient substances are supplied to cells and tissues via the process of transudation through path is called *Srotas*.

स्त्रोतांसि खलु परिणाममापद्यमानानां ।
धातूनामभिवाहिनि भवन्त्ययनार्थेन ॥
C.Vi 5/3

Channels carry the transformed *dhātus* to different destinations through their mess of network to nourish the cells and tissues.

मूलात् खादान्तरं देहे प्रसृतं त्वभिवाहि यत् ।
स्त्रोतस्तदिति विज्ञेय सिरा धमनी वर्जितम् ॥
S.Śa 9/13

Srotasas are defined as empty spaces spreaded to entire body, which originates from root space except *sirā* and *dhamani*.

आकाशीयावकाशानां देहे नामानि देहिनाम् ।
सिराः स्त्रोतांसि मार्गाः खं धमन्यः ॥
S.Su 9/13 (Dalhaṇa)

All the entire empty space wherever it is present distributed uniquely for the supply of proper nourishment to the body is called *Srotas*. Synonyms are *sirā, srotāmsi, mārga, kha, dhamani*.

मनः प्राणान्नपानीय दोष धातूपधातवः ।
धातुनां च मलामूत्रं मल मित्यादयस्तनौ ॥
B.P.Pū 3/271

Srotasas are those in which *manas, prāṇa, anna, jala, doṣa, dhātu, updhātu, dhātu mala, mūtra, purīṣa* are circulating.

सञ्चरन्ति हि यैमार्गैस्तानि स्त्रोतांसि सञ्जगुः । बहूनि
तानि संख्याय शक्यन्ते नैव भाषितुम् ॥
B.P.Pū 3/272

It is not possible to numerate all *Srotasas* because these are innumerable.

स्त्रोतो पर्याय (Synonyms of Srotas)

स्त्रोतांसि, सिराः, धमन्यः, रसायन्यः, रसवाहिन्यः, नाड्याः, पन्थानः, मार्गाः, शरीरच्छिद्राणि, संवृतासंवृतानि, स्थानानि, आशयाः, निकेतश्चेति शरीर धात्वावकाशानां लक्ष्यालक्ष्याणां नामानि भवन्ति । *C.Vi 5/9*

Synonyms of *Srotas* are as follows–*srotāmsi, sirā, dhamani, rasāyani, rasavāhi, nāḍyā, panthāna, mārgā, śariracchidrāṇi, samvṛtāsamvṛtāni, sthānāni, āśaya, niketa* etc. millions of *Srotas* are present in the body.

तत्र स्त्रोतसामेव विशेषाः सिरा धमन्यः ।
A.S.Sā 6/48

Sirā and *dhamani* are the modifications of *Srotas* only. *Srotas, sirā, dhamanī* resides closely and perform similar functions.

Structure of Srotas

बिसानामिवा सूक्ष्माणि दूरं प्रविसृतानि च ।
द्वाराणि स्त्रोतसां देहे रसो यैरुपचीयते ॥
A.H.Śā 3/46

Orifices of the *Srotas* are minute, spreaded long and far away like lotus stalk. Through such channels *'rasa'* circulates and nourishes cells and tissues.

Colour of the Srotas

स्वधातु समवर्णानि वृत्तस्थूलान्यणूनि च । स्त्रोतांसि
दीर्घाण्यकृत्या प्रतानसदृशानि च ॥
C.Vi 5/25, A.H.Sā 3/45

Srotas as attain the colour of the *dhātu* in which they circulate. These are circular, big, small, long and resembles like lines of a leaf.

स्त्रोतो प्रामुख्यता (Importance of Srotas in Pathogenesis)

अहित सेवनात् तानि दुष्टाय रोगाय, विशुद्धानि सुखस्य च ।
A.H.Śā 3/42

Improper foods, erratic behaviour and such other things which are not conducive to the body brings abnormality in *Srotas* leading to manifestation of disease. Adoptance of normal conducive foods and actions leads to happiness and sound health.

स्त्रोतोविद्धमतो वैद्यः प्रत्याख्याय प्रसाधयेत् ।
S.Śā 9/2, A.H. 3/48

Injury to the *Srotas* manifest incurable condition, that's why such information should be given to the patient and to his attenders and then proceed to the treatment to remove foreign body.

वातपित्तश्लेष्माणां पुनः सर्वशरीर चराणां सर्वाणि स्त्रोतांस्यनभूतानि, तद्वदतीन्द्रियाणां पुनः सत्वादिनां केवलं चेतनावच्छरीरमयनभूतमधिष्ठान भूतं च। तदेतत् स्त्रोतसां प्रकृतिभूतत्वान्न विकारैरुपसृज्यते । *C.Vi 5/7*

Bodily humours *vāta, pitta* and *kapha* moves inside the *Srotas* to perform their normal functions at different places. Similarly things which are beyond perception of sensory organs like mind etc. move inside the *Srotas* and are located in sentinent portion of the body. Healthy *Srotas* as perform their normal functions as a result body is free from diseases and un healthy *Srotas* become root cause for the development of pathogenesis.

ते चावकाशाः प्रवुकपिताः स्थान स्थान्मार्गस्यांश्च धातूनप्रकोपयन्ति तेऽपि तान् स्त्रोतांसि च । स्त्रोतांसि धातवश्य धातुन तेषां सर्वेषामेवदूषयितारो दुष्टा दोषाः ते च प्रायशो दूष्यन्त्यग्नि दोषात् । *A.S.Śā 6/32*

Once the empty spaces (*Srotas*) become abnormal, it brings abnormality in normal *dhātu* by not transforting to required destination, this is because of the abnormality in *Srotas. Srotas* vitiates other *Srotas, dhātus vitiates* other *dhātus,* for all these happenings disturbed *doṣās* are responsible. *Doṣās* get aggravated by the disturbed functions of *Agni.* That's why life span, health, strength and nourishment etc. are depends on *Agni.*

Due to their pervasion to entire body, they become responsible for aggravation as well as alleviation of *doṣās* inside the body. That's why some people says that body is the conglomeration of *Srotas.*

स्त्रोतोवेध लक्षण (Srotovedha lakṣaṇa)

व्यधे तु स्त्रोतसां मोहकम्पाध्मान वमि ज्वराः ।
प्रलापशूल विण्मूत्ररोधो मरणमेव वा ॥
स्त्रोतोविद्धमतो वैद्यः प्रत्याख्याय प्रसादयेत् ।
उद्धुत्यं शल्यं यत्नेन सद्यः क्षतविधानतः ॥
A.H.Śā 3/47-48

Clinical features develop due to injury to *Srotas* are unconsciousness, tremors, distention of abdomen, vomiting, fever, delirium, pain, obstruction for urine and stool, death. That's why considering these points physician should inform to the patient attender about its poor prognosis and then plan the treatment by removing the foreign body and manage the wounds as per wounds line of treatment.

व्यधे तु स्त्रोतसां भ्रम मोह कम्पे प्रलापाध्मानशूलारुचि तृट्च्छर्दि ज्वराति रुधिर स्तृति मूत्र पुरीष रोधा मरणं च । तस्मात् स्त्रोतोविद्धं प्रत्याख्यायोपचरेत् । *A.S.Śā 6/19*

Injury to *Srotas* leads to development of giddiness, unconsciousness (confusion), tremors, delirium, distension of abdomen, pain, anorexia, thirst, vomiting, fever, bleeding from injured site, obstruction for urine & stool and lastly death. Start the line of treatment by intimating its poor prognosis.

स्त्रोतो भेद (Classification of Srotas)

Mainly *Srotas* is classified into two kinds namely *bāhya* and *abhyantara Srotas.*

According to Suśruta

bāhya Srotas or *bahirmukha Srotas* in Males are 09 in number and in Females 12 in number.

According to Śārañgadhara

Bāhya Srotas or *bahirmukha Srotas* in Males are 10 in number and in Females 13 in number.

According to Caraka

Abhyantara Srotas or *antarmukhi Srotas* are 13 in number and 11 pairs according to *suśruta.*

Suśruta does not included *asthivāha, majjāvāha* and *svedavāha Srotas.*

बाह्य या बहिर्मुख स्रोतस् (Bāhya Srotas or Bahirmukha Srotas)

स्रोतांसि नासिके कर्णौ नेत्रे पायवश्च मेहनम्।
स्तनौ रक्तपथश्चेति नारीणामधिकम् त्रयम्॥
A.H.Śā 3/40-41, A.S.Śā 6/34

श्रवण नयन वदन घ्राण गुद मेढ्राणि नव स्रोतांसि नराणां बहिर्मुखानि, एतान्येव स्त्रीणामपराणि च त्रीणी द्वे स्तनयोरधस्ताद्रक्तवहं च। *S.Śā 5/10*

नासा नयन कर्णानां द्वे द्वे रन्ध्रे प्रकीर्तिते। मेहनपान वक्त्राणामेकैकं रन्ध्रमुच्यते। दशमं मस्तकं प्रोक्तं रन्ध्राणीति नृणां विधुः स्त्रीणां त्रीण्यधिकानि स्युः स्तनयोर्गर्भवत्यनः। सूक्ष्मच्छिद्राणि चान्यानि मतानि त्वचि जन्मिनाम्। *Ś.S.Pu 5/63-65*

A	नासा रन्ध्र (*Nāsā randhra*)	02 (Nasal cavities)
B	कर्ण रन्ध्र (*Karṇa randhra*)	02 (Ear cavities)
C	नयन रन्ध्र (*Nayana randhra*)	02 (Eye path)
D	मेहन रन्ध्र (मेढ्र) (*Mehana randhra*)	01 (Genital path)
E	गुद रन्ध्र (अपान पायु) (*Guda randhra*)	01 (Anal canal)
F	वदन रन्ध्र (वक्त्रा) (*Vadana randhra*)	01 (Oral cavity)

Total 9 channels are described as *bahirmukha* channels i.e. channels having opening outside.

Śārañgadhara included one more to above nine i.e. मस्तक रन्ध्र (Brain canal). In case of females 3 more *Srotas* are included namely

स्तन रन्ध्र (*Stana randhra*)	02 (Breast channels)
रक्तपथ (अधस्ताद) रक्तवह व गर्भ रन्ध्र (*Raktapatha (Adhastad) raktavaha* or *garbha randhra*)	1 (Uterus path)

अभ्यन्तर स्रोतस् (Abhyantara Srotas)

तथाऽपराण्यन्तः स्रोतांसि जीवितायतनानि।
त्रयोदश प्राणोदकान्न धातुमलानामायतनानि॥
A.S.Śā 6/35

प्राणोदकान्न रस रुधिरमांसमेदोस्थिमज्जा शुक्र मूत्र पुरीष स्वेदवहानिति। *C.Vi 5/7*

13 varieties of *Srotas* are depicted as *abhayantara Srotas* (inward opening channels).

1. *Prāṇavaha Srotas*
2. Udakavaha *Srotas*
3. *Annavaha Srotas*
4. *Rasavaha Srotas*
5. *Rudhiravaha Srotas*
6. *Māmsavaha Srotas*
7. *Medovaha Srotas*
8. *Asthivaha Srotas*
9. *Majjāvaha Srotas*
10. *Śukravaha Srotas*
11. *Mūtravaha Srotas*
12. *Puriṣavaha Srotas*
13. *Svedavaha Srotas*

11 Pairs According to Suśruta

तानि तु प्राणान्नोदक रस रक्त मांस मेदो मूत्र पुरीष शुक्रार्तववहानि; येष्वधिकारः, एकेषां बहूनि एतेषां विशेषा बहवः॥ *S.Śā 9/12*

1. *Prāṇavaha Srotas*–02
2. *Annavaha Srotas*–02
3. *Udakavaha Srotas*–02
4. *Rasavaha Srotas*–02
5. *Raktavaha Srotas*–02
6. *Māmsavaha Srotas*–02
7. *Medovaha Srotas*–02
8. *Mūtravaha Srotas*–02
9. *Puriṣavaha Srotas*–02
10. *Śukravaha Srotas*–02
11. *Ārtavavaha Srotas*–02

Why *Suśruta* did not included *asthivaha, majjāvaha* and *svedavaha Srotas?*

अस्थि मज्जा स्वेदवाहिषु स्रोतः सु सस्त्वप्यनधिकारः कथं ? तत्रास्थिवहानां सकलानामेव मेदोमूलं, मज्जावहानां च तेषां सकलान्येव अस्थिनि सकलशरीरगतानि, न च सकलशरीरगत विद्धलक्षणं साध्यादि ज्ञान निश्चायकं, एवं स्वेदवहानामपि केवलं स्वेदोमूलमिति, पूवैर्णैव समानं अतः शल्यतन्त्रे तेषां मूल विद्धलक्षणान-धिकारः। *S.Sā 9/12 (Dalhaṇa)*

Asthivaha Srotas, majjāvaha Srotas and svedavaha Srotas originated from the meda and it was discussed in detail under *medovaha Srotas.* As these *Srotas*as pervaded the entire body, that's why it is not possible to explain the symptoms of entire region. Moreover it doesn't come under the purview of surgeons.

स्रोतोदुष्टि निदान (Etiological Factors for Srotoduṣṭi)

> आहारश्च विहारश्च यः स्याद्दोषगुणैः समः ।
> धातुभिर्विगुणो यश्च स्रोतसां स प्रदूषकः ॥
>
> *C.Vi 5/23, A.H. Śā 3/44*

Improper dietetics which aggravates *vātādi doṣās* i.e. person who is not following the rules and regulations of eight fold diet principles.

Erratic behaviour or activities related to speech, body and mind aggravates the *vātādi doṣās.*

Diet and activities which are contrary to *dhātus.* For example day sleep and fatty foods which aggravates *meda dhātu* and brings vitiation in them inspite of having identical properties. So, *dhātubirviguṇa* refers to factors which are unwholesome and non conductive to the *dhātus.*

स्रोतोदुष्टि प्रकार (Classification of Sroto Duṣṭi)

> अतिप्रवृत्तिः सङ्गो वा सिराणां ग्रन्थयोऽपिवा । विमर्गतो
> वा गमनं स्रोतसां दुष्टि लक्षणम् ॥
>
> *C.Vi 5/24, A.H.Śa 3/45*

There are mainly four kinds of *srotoduṣṭi* explained.

1. *Ati pravṛtti*
2. *Saṅgha*
3. *Sirā granthi*
4. *Vimārgagamana*

अतिप्रवृत्ति [Atipravṛtti (Excessive actions)]

example :

Excessive urination–*Prameha*
Excessive watery stools–*Atisāra*
Excessive mucous secretions–*Tamakaśvāsa*

सङ्ग [Saṅga (complete or partial obstruction of Srotas.)]

example :

- *Mūtrakṛcchra*
- *Vibandha*
- *Jvara*
- *Grahaṇi* etc.

सिराग्रन्थि (Sirāgranthi) (कुटिल भावत्वं, i.e. nodules, tumours, newgrowths inside the Srotas)

Example : *Arśa, udara Roga, carmakila etc.*

विमार्गगमन [Vimārgagamana (leaving its own path and entering into other path)]

example :

> विमार्गगमनं च यथा मलस्य मूत्रमार्ग गमनमित्यादि ।
>
> *Cakrapāṇi*

Entrance of *Mala* into *mūtra mārga.*

- *Bhagandara*
- *Raktapitta*
- *Udara Roga*
- *Kāmalā*
- *Tamaka śvāsa*
- *Śopha*
- *Injury (S.Sā 9/12)*

प्राणवह स्रोतस् (*Prāṇavaha Srotas*)

Channels carrying *prāṇavāyu* is called *prāṇavaha Srotas.*

मूल (Root)

> तत्र प्राणवहानां स्रोतसां हृदयं मूलं महास्रोतश्च ।
>
> *C.Vi 5/8*

Channels carrying *prāṇavāyu* originates from *hṛdaya* (heart) and *mahā Srotas* (gastro intestinal act).

> तत्र प्राणवहे द्वे, तयोर्मूलं हृदयं रसवाहिन्यश्च धमन्यः ।
>
> *S.Śa 9/12*

Prāṇavaha Srotas are two in number and they originate from *hṛdaya* (heart) and *rasavāhi dhamani* (arteries carrying *rasa*).

प्राणवह स्रोतोदुष्टि निदान [Nidāna (Etiological factors)]

Factors which brings abnormality in *prāṇavaha Srotas* are as follows–

> क्षयात् सन्धारणाद्रौक्ष्यद्व्यायामात् क्षुदितस्य च ।
> प्राणवाहीनि दुष्यन्ति स्रोतांस्यन्यैश्च दारुणैः ॥
>
> *C.Vi 5/10, A.S.Śa 9/36*

Depletion of *dhātus,* suppression of natural urges, intake of *rukṣādi āhāra* and *vihāra,* heavy exercises during hunger and other factors which brings vitiation in *Srotas.*

प्राणवह स्रोतोदुष्टि लक्षण (Prāṇava srotoduṣṭi lakṣaṇa)

The following symptoms manifest due to vitiation in *prāṇavaha Srotas* are as follows.

प्रदुष्टानां तु खल्वेषामिदं विशेष विज्ञानं भवति। तद्यथा अतिसृष्टमतिबद्धं कुपितमल्पाल्प मभीक्ष्णं वा सशब्द शूल मुच्छ्वसन्तं दृष्टवा प्राणवहान्यश्च स्रोतांसि प्रदुष्टानिति विद्यात्। *C.Vi 5/8*

- Prolonged respiration
- Obstructed respiration
- Agitated respiration
- Frequent respiration
- Respiration associated with sound and pain

तत्र विद्धस्य क्रोधविनमन मोहन भ्रमण वेपनानि मरणं वा भवति। *S.Śa 9.12*

Injury to *prāṇavaha Srotas* leads to groaning, bending down of the body, illusion, tremors, or ultimately death.

प्राणवह स्रोतो विकार (Diseases of Prāṇavaha Srotas)

• *Śvāsa*	• *Kāsa*
• *Hikkā*	• *Rājayakṣma*
• *Hṛdroga*	• *Svarabheda*
• *Sanyasa*	• *Vātavyādhi*

उदकवह स्रोतस् (Udakavaha Srotas)

Channels which carries *udaka* (water) is called *udakavaha-Srotas.*

Synonyms : *Aṁbuvaha, toyavaha, udakavaha*

मूल (Root)

उदकवहानां स्रोतसां तालुमूलं क्लोमं च। *C.Vi. 5/8*

Udakavaha Srotas have their origin in *tālu* (palate) and *kloma* (pancreas).

उदकवहे द्वे, तयोर्मूलं तालु क्लोमं च। *S.Sa. 9/12*

Udakavaha Srotas are two in number and they originates from *tālu* (palate) and *kloma* (pancreas).

निदान (Etiological factors)

औष्यादामादभयात् पानादति शुष्कान्नसेवनात्।
अम्बुवाहिनी दुष्यन्ति तृष्णाश्चाति पीडनात्॥
C.Vi. 5/11

Udakavaha Srotas gets vitiated by exposure to heat, indigestion, fear, excess intake of drinks, intake of dry food and who is suffering from excessive thirst.

उदकवह स्रोतोदुष्टि लक्षण (Udakavaha Sroto Duṣṭi Lakṣaṇa)

प्रदुष्टानां तु खल्वेषामिदं विशेष विज्ञानं भवति; तद्यथा जिह्वाताल्वोष्ठ क्लोमशोषं पिपासां चाति प्रवृद्धां दुष्टोदकवहान्यस्य स्रोतांसि प्रदुष्टानिति विद्यात्। *C.Vi. 5/8*

Characteristic vitiation of *udakavaha Srotas* are dryness in tongue, palate, lips & *kloma* along with excessive severe thirst.

तत्र विद्धस्य पिपासा सद्यो मरणं च। *S.Śā 9/12*

Injury to *udakavaha Srotas* develops thirst and patient dies instanteneously within 7 days.

उदकवह स्रोतो विकार (Diseases of Udakavaha Srotas)

• *Prameha*	• *Udara Roga*
• *Śopha*	• *Tamaka śvāsa*
• *Tṛṣṇā*	• *Pānātyaya*

अन्नवह स्रोतस् (Annavaha Srotas)

Channels carrying *anna* (food) is called *annavaha Srotas.*

मूल (Root)

अन्नवहानां स्रोतसामाशयो मूलं, वामं च पार्श्वं। *C.Vi 5/8*

Annavaha Srotas originates from *āmāśaya* (stomach) and *vāma pārśva.*

अन्नवहे द्वे, तयोर्मूलमामाशयोऽन्नवाहिन्यश्च धमन्यः। *S.Śā 9/12*

Annavaha Srotas are two in number and they have their origin in *āmāśaya* (stomach) and *annavāhi dhamani* (*anna* carrying *dhamanies*).

निदान (Etiological factors)

अतिमात्रस्य चाकाले चाहितस्य च भोजनात्।
अन्नवाहिनी दुष्यन्ति वैगुण्यात् पावकस्य च॥
C.Vi 5/11

The following etiologies brings vitiation in *annavaha Srotas.*

- Excess intake of food
- Eating during improper time
- Consumption of unwholesome food
- Due to impairment in *Agni*
- Injury *(S.Śā 9/12)*

अन्नवह स्रोतोदुष्टि लक्षण (Annavaha Srotoduṣṭi Lakṣaṇa)

प्रदुष्टानां तु खल्वेषामिदं विशेष विज्ञानं भवति; तद्यथा

अनन्नाभिलाषामरोचक विपाकौ छर्दिं च दृष्ट्वा अन्नवहान्यश्च स्रोतांसि प्रदुष्टानिनि विद्यात् । *C.Vi 5/8*

Characteristic properties of *annavaha Srotas* vitiation are as follows–

- Lack of interest towards food
- Anorexia
- Indigestion
- Vomiting

अन्नवह स्रोतोदुष्टि विकार (Diseases of annavaha Srotas)

- *Chardi*
- *Atisāra*
- *Ajīrṇa*
- *Agnimāndhya*
- *Kṛmi*
- *Arocaka*
- *Gulma*
- *MukhaRoga*
- *Āmlapitta*
- *Visūcikā*
- *Vilambikā*
- *Arśa*
- *Śūla*
- *Udara Roga*

रसवह स्रोतस् (Rasavaha Srotas)

Channels which carries *rasa* (nutrient substances) is called *rasavaha Srotas.*

मूल (Root)

रसवहानां स्रोतसां हृदयं मूलं दश च धमन्यः । *C.Vi 5/8*

Rasavaha Srotas have their root in *hṛdaya* (heart) and *daśa dhamani* (ten vessels).

रसवहे द्वे, तयोर्मूलं हृदयं रसवाहिन्यश्च धमन्यः ।
S.Śā 9/12

Rasavaha Srotas are two in number and they originate from *hṛdaya* (Heart) and *rasavāhi dhamani* (*rasa* carrying channels).

निदान (Etiological factors)

गुरुशीत मतिस्निग्ध मतिमात्रं समश्नताम् ।
रसवाहिनी दूष्यन्ति चिन्त्यानां चातिचिन्तनात् ॥
C.Vi.5/13

The following factors brings vitiation in *rasavaha Srotas* are as follows–

- Intake of heavy & cold substances
- Excess intake of unctous substances
- Consumption of excess food
- Intake of wholesome and unwholesome food together
- Excessive worry.

रसवह स्रोतोदुष्टि लक्षण (Rasavaha Srotoduṣṭi Lakṣaṇa)

Lack of interest towards food, anorexia, distaste in mouth etc. described under *sāma rasa dhātu.*

तत्र विद्धस्य शोषः प्राणवह विद्धवच्च मरणं तल्लिङ्गानि च । *S.Śā 9/12*

Injury to *rasavāha Srotas* manifest *śoṣa,* other symptoms *similar to prāṇavahasroto vedha lakṣaṇa* and death.

रसवह स्रोतो विकार (Diseases of Rasavaha Srotas)

- *Hṛd Roga*
- *Medo Roga*
- *Prameha*
- *Rasagata kuṣṭha*
- *Viṣamajvara*
- *Vātarakta*
- *Klaibya*
- *Rājayakṣmā*
- *Jvara*
- *Mūrchā & Sanyasa*
- *Visarpa*
- *Dhātugata jvara*
- *Pāṇḍu*
- *Śoṣa*

शोणितवह स्रोतस् (Śoṇitavaha Srotas)

Channels which carries *śoṇita* (blood) is called *śoṇitavaha Srotas.*

मूल (Root)

शोणितवहानां स्रोतसां यकृन्मूलं प्लीहा च । *C.Vi 5/8*

Śoṇitavaha Srotas have their root in *yakṛt* (liver) and *plīhā* (spleen).

रक्तवहे द्वे, तयोर्मूलं यकृत् प्लीहानौ रक्तवाहिन्यश्च धमन्यः ।
S.Śa 9/12

Raktavaha Srotas are two in number and have their root in *yakṛt* (liver), *plīhā* (spleen) and *raktavāhi dhamani* (*rakta* carrying channels).

निदान (Etiological factors)

विदाहिन्यपानानि स्निग्धोष्णानि द्रवाणि च ।
रक्तवाहिनी दूष्यन्ति भजता चातपनलौ ॥
C.Vi 5/14

The following factors brings vitiation in *śoṇitavaha Srotas* are as follows :

- Intake of substances which induces burning sensation inside the body.
- Excessive consumption of unctous, hot, watery substances
- Excessive exposure to sun and heat
- Injury *(S.Śā 9/12)*

पित्त प्रकोपणैरेव चाभीक्ष्णं द्रवस्निग्धगुरु भिराहारैर्दिवास्वप्नक्रोधानलातपश्रमाभिघाता जीर्णाविरुद्धध्यशनादिभिर्विशेषैरसृक् प्रकोपमापद्यते ॥ *S.Su 21/25*

Rakta aggravating factors are as follows–

- All *pitta* aggravating factors.
- Excess intake of liquid, unctuous, heavy foods.
- Sleeping during day time.
- Excessive anger, exposure to fire and sun; exertion, injury, eating during indigestion, eating antagonistic foods and taking food during digestion etc.

यस्माद्रक्तं बिना दौषर्न कदाचित् प्रकुप्यति।
तस्मात्तस्य यथा दोषं कालं विद्यात् प्रकोपणे ॥
S.Su 21/25

Without the involvement of *doṣās, rakta* will not aggravate and time of aggravation may be known as per involvement of *doṣa*.

शोणितवह स्रोतोदुष्टि लक्षण (Śoṇitavaha Srotoduṣṭi Lakṣaṇa)

The following symptoms develop after the vitiation of *śoṇitavaha Srotas* are as follows–

Kuṣṭha, visarpa etc. which are described in detail under *sāma rakta.*

तत्र विद्धस्य श्यावाङ्गता ज्वरो दाहः पाण्डुता शोणितगमनं रक्त नेत्रता चेति। *S.Śā 9/12*

Injury to *raktavaha Srotas* manifest bluish discolouration of body, fever, burning sensation, paleness, haemorrhages, redness in eye.

शोणितवह स्रोतो विकार (Diseases of Śoṇitavaha Srotas)

- *Kroṣṭuka śirṣa*
- *Masūrikā*
- *Visarpa*
- *Raktapitta*
- *Raktadhātugatajvara*
- *Vidradhi*
- *Raktagulma*
- *Śitapitta*
- *Koṭha*
- *Vātarakta*
- *Kuṣṭha*
- *Śvitra*
- *Dāha*
- *Asṛgdhara*
- *Arśa*
- *Kāmalā*
- *Udarda*

मांसवह स्रोतस् (Māṁsavaha Srotas)

Channels which carries the substances to nourish *māmsa* is called *māmsavaha Srotas.*

मूल (Root)

मांसवहानां च स्रोतसां स्नायुर्मूलं त्वक् च। *C.Vi 5/8*

Māmsavaha Srotas have their origin in *snāyu* (ligaments) and *tvak* (skin).

मांसवहे द्वे, तयोर्मूलं स्नायुत्वचं रक्तवहान्यश्च धमन्यः।
S.Śā 9/13

Māmsavaha Srotas are two in number and have their roots in *snāyu* (ligaments), *tvacā* (skin) and *raktavahānyascha dhamani* (*rakta* carrying *dhamani*).

निदान (Etiological factors)

अभिष्यन्दिनि भोज्यानि स्थूलानि च गुरुणि च।
मांसवाहीनि दुष्यन्ति भुक्तां च स्वपतां दिवा।
C.Vi 5/15

Due to following etiological factors *māmsavaha Srotas* become vitiated.

- Intake of food substances which induce moistureness in *doṣa, dhātu, Srotas*
- Heavy food
- Bulk promoting foods
- Intake of food followed by day sleep
- Injury *(S.Śā 9/12)*

मांसवह स्रोतोदुष्टि लक्षण (Māṁsavaha Srotoduṣṭi Lakṣaṇa)

The following manifestations develops due to morbidity in *māmsavaha Srotas.* Granuloma, tonsilitis etc. described under *sāma māmsa.*

तत्र विद्धस्य श्वयथुमांस शोषः सिरा ग्रन्थयो मरणं च।
S.Śā 9/12

Injury to *māmsavaha Srotas* manifest inflammation in muscles, muscle wasting, varcicose veins and death.

मांसवह स्रोतो विकार (Diseases of Māṁsavaha Srotas)

- *Prameha*
- *Kuṣṭha*
- *Māmsagata jvara*
- *Vātarakta*
- *Vidradhi*
- *Rājayakṣmā*
- *Visarpa*
- *Arśa*
- *Śotha*
- *Masūrikā*

मेदोवह स्रोतस् (Medovaha Srotas)

Channels which carries the substances which nourishes *meda* is called *medovaha Srotas.*

मूल (Root)

मेदोवहानां स्रोतसां वृक्कौ मूलं वपावहनं च । *C.Vi 5/8*

Medavaha Srotas have their root in *vṛkkau* (kidneys) and *vapāvahana* (omentum).

मेदोवहे द्वे, तयोर्मूलं कटि वृक्कौ च । *S.Śā 9/12*

Medovaha Srotas is of two types and originates from *kaṭi* (waist) and *vṛkkau* (kidneys).

मेदोवाहिनि वृक्कौ मांस च । *A.Śā 6/43*

Medovaha Srotas have their root in *vṛkkau* & *māmsa* (muscles).

निदान (Etiological factors)

अव्यायामाद्दिवास्वप्नान्मेद्यानां चाति भक्षणात् ।
मेदोवाहिनी दूष्यन्ति वारुण्याश्चातिसेवनात् ॥
C.Vi 5/16

The following etiological factors brings vitiation in *medovaha Srotas.*

- Lack of physical exercises
- Day sleep
- Excess intake of fatty foods
- Excess drinking of *vāruṇi* (a kind of wine)
- Injury *(S.Śā 9/12)*

मेदोवह स्रोतोदुष्टि लक्षण (Medovaha Srotoduṣṭi Lakṣaṇa)

Due to vitiation in *medavaha Srotas* following symptoms develops. *Aṣṭa nindita puruṣa, prameha* etc. described in detail under *sāma meda.*

तत्र विद्धस्य स्वेदागमनं स्निग्धाङ्गता तालु शोषः स्थूलं शोफता पिपासा च । *C.S.Śā 9/12*

Injury to *medovaha Srotas* leads to excessive perspiration, unctousness or sliminess of body parts, dryness in *tālu,* marked swelling and severe thirst.

मेदोवह स्रोतो विकार (Diseases of Medovaha Srotas)

- *Prameha*
- *Śvitra*
- *Viṣamajvara*
- *Kuṣṭha*
- *Masūrikā*
- *Ślīpada*
- *Medo Roga*
- *Jvara*
- *Medodhātugata jvara*
- *Vātarakta*
- *Śotha*
- *Udara Roga*

अस्थिवह स्रोतस् (Asthivaha Srotas)

Channels which carries the substances which nourish *asthi* is called *asthivaha Srotas.*

मूल (Root)

अस्थिवहानां स्रोतसां मेदो मूलं जघनं च । *C.Vi 5/8*

Asthivaha Srotas have their roots in *meda* (adipose tissue) and *Jaghana* (buttocks).

निदान (Etiological factors)

व्यायामदतिसंक्षोभादस्न्थामति विघट्टनात् ।
अस्थिवाहीनी दूष्यन्ति वातलानां च सेवनात् ॥
C.Vi 5/17

The following factors brings vitiation in *asthivavaha Srotas* are as follows.

- Excessive physical exercises
- Over strain to bones
- Friction among bones in excess
- Consumption of *vāta* aggravating factors

अस्थिवह स्रोतोदुष्टि लक्षण (Asthivaha Srotoduṣṭi Lakṣaṇa)

Due to abnormality in *asthivaha Srotas* following symptoms develops i.e. pain in bones and teeth, discolouration etc. described in detail in under *sāmāṣthi.*

अस्थिवह स्रोतो विकार (Diseases of Asthivaha Srotas)

- *Āmavāta*
- *Kuṣṭha*
- *Rājayakṣmā*
- *Asthidhātugata jvara*
- *Viṣamajvara*
- *Masūrikā*
- *Sandhivāta*
- *Jvara*
- *Vātarakta*
- *Asthidhātugata kuṣṭha*
- *Danta Roga*

मज्जावह स्रोतस् (Majjāvaha Srotas)

Channels which carry the substance to nourish *majjā* is called *majjāvaha Srotas.*

मूल (Root)

मज्जावहानां स्रोतसामस्थिनि मूलं सन्धयश्च । *C.Vi 5/8*

Majjāvaha Srotas have their root in *asthi* (bones) and *sandhi* (joints).

निदान (Etiological factors)

उत्पेषादत्यभिष्यन्दादभिघातात् प्रपीडनात् ।
मज्जावाहिनी दुष्यन्ति विरुद्धानां च सेवनात् ।
C.Vi 5/8

Majjāvaha Srotas gets vitiated by excessive crushing, increased moisture, injury, compression of bone and intake of incompatible dietetics.

मज्जावह स्रोतोदुष्टि लक्षण (Majjāvaha Srotoduṣṭi Lakṣaṇa)

Due to *majjāvaha Srotas* vitiation the following symptoms develop.

- Pain in joints
- Giddiness etc. described indetail under *sāma mājja.*

मज्जावह स्रोतोविकार (Diseases of Majjāvaha Srotas)

- *Sandhivāta*
- *Vātarakta*
- *Rājayakṣmā*
- *Masūrikā*
- *Majjādhātugata Jvara*
- *Āmavāta*
- *Kuṣṭha*
- *Prameha*
- *Viṣamajvara*
- *Pakṣāghāta*

शुक्रवह स्रोतस् (Śukravaha Srotas)

Channels which carry the substances to nourish *śukra* is called *śukravaha Srotas.*

Synonyms : *Viryavāhi (Śārañgadhar), retovāhi (caraka).*

मूल (Root)

शुक्रवहानां स्रोतसां वृषणौमूलं शेफश्च । *C.Vi 5/8*

Śukravaha Srotas have their origin in *vṛṣaṇau* (testicles) and *śepha* (penis).

शुक्रवहे द्वे, तयोर्मूलं स्तनौ वृषणौ च । *S.Śā 9/12*

Śukravaha Srotas are two in number and have their root in *stanau* (breasts) and *vṛṣaṇau* (testiles).

शुक्रवाहिनिनां स्तनौ मुष्कौ मज्जा च । *A.Śa 6/43*

Śukravaha Srotas have their root in *stana* (breast), *muṣkau* (scroatum) and *majjā* (bone marrow).

निदान (Etiological factors)

अकालयोनिगमनान्निग्रहादति मैथुनात् ।
शुक्रवाहिनी दुष्यन्ति शस्त्रक्षाराग्निस्तथा ॥
C.Vi 5/19

The following factors brings vitiation in *śukravaha Srotas* are as follows–

- Sexual intercourse without proper sexual arousal or having sexual intercourse with other animals like dog etc.
- Suppression of sexual urge
- Excess indulgence in sexual activities
- Injury by surgery, alkalies and cauterization

शुक्रवह स्रोतोदुष्टि लक्षण (Śukravaha Sroto Duṣṭi Lakṣaṇa)

Vitiated *sukravaha Srotas* develops following symptoms.

तत्र विद्धस्य क्लीबता चिरात् प्रसेको रक्त शुक्रता च ।
S.Śa 9/12

Injury to *śukravaha Srotas* leads to impotency, delayed emission of *śukra, śukra* comes out with rakta along with difficulty.

शुक्रवह स्रोतो विकार (Diseases of Śukravaha Srotas)

- *Klaibya*
  - *i) Bijopaghātaja klaibya*
  - *ii) Dhvajabhañgaja klaibya*
  - *iii) Jarāja klaibya*
  - *iv) Śukra kṣayaja klaibya*
- *Jvara*
- *Grahaṇi Roga*
- *Śukradhātugata jvara*
- *Śoṣa*
- *Kuṣṭha*
- *Rājayakṣmā*
- *Aśmari*
- *Masūrikā*
- *Arśa*

निदान (Etiological factors)

अतिव्यवायाद्वध्यामादसात्म्यानां च सेवनात् । अकाले वाऽप्ययोनौ वा मैथुनं न च गच्छतः रुक्षतिक्तकषायातिलवणाम्लोष्णासेवनात् । नारीणामरसज्ञानां गमनाज्जरया तथा । चिन्ताशोकादविस्त्रम्भाच्छस्त्रक्षाराग्निविभ्रमात् । भयात्क्रोधादभीचाराद् व्याधिभिः कर्शितस्य च । वेगाघातात् क्षताच्चापि धातूनां संप्रदूषणात् । दोषाः पृथक् समस्ता वा प्राप्य रेतोवहाः सिराः । शुक्रं संदूषयन्त्याशु...... । *C.Ci 30/135-138*

The following factors brings abnormality in *śukravaha Srotas* are as follows.

- Sexual intercourse in excess
- Heavy physical exercises
- Consumption of unwholesome food
- Untimely sexual intercourse

- Indulging in sexual activities with other animals and other than female genital organs.
- Controlling semen during the time of ejaculation.
- Intake of food which are ununctous, bitter, astringent, salt, sour & hot.
- Indulging in sexual intercourse with women who is not passionate.
- Old age, worry, grief and lack of confidence in partner.
- Injury to genital organs by sharp instruments, alkalies, cauterization
- Fear, anger and application of black magic
- Severe emaciation due to chronic diseases
- Suppression of natural urges
- Injury to *dhātus*
- Vitiation in *dhātus*

अष्ट शुक्र दोष (Aṣṭa Śukra Doṣa)

फेनिलं तनु रुक्षं च विवर्णं पूति पिच्छिलम् । अन्यधातूपसंसृष्टमवसादि तथाऽष्टम् । *C.Ci 30/239.240*

Eight kinds of morbidity observed in *śukra* are as follows :

1. Froathy semen
2. Thin semen
3. Rough or ununctous semen
4. Discolouration
5. Foul smell
6. Slimy semen
7. Semen mixed with other *dhātus*
8. Sinking of semen in water

मूत्रवह स्त्रोतस् (Mūtravaha Srotas)

Channels which carry the *mūtra* is called *mūtravaha Srotas.*

मूल (Root)

मूत्रवहानां स्त्रोतसां बस्तिर्मूलं वङ्क्षणौ च । *C.Vi 5/8*

Mūtravaha Srotas have their root in *basti* (urinary bladder) and *vankṣaṇau* (kidneys).

मूत्रवहे द्वे, तयोर्मूलं बस्तिर्मेढ्रं च । *S.Śā 9/12*

Mūtravaha Srotas are two in number and have their origin in *basti* (urinary bladder) and *meḍhra* (penis).

निदान (Etiological factors)

मूत्रितोदक भक्ष्य स्त्रीसेवनान्मूत्र निग्रहात् ।
मूत्रवाहीनी दुष्यन्ति क्षीणस्यभिक्षतस्य च ॥
C.Vi 5/20

- Intake of drinks & foods during urge for micturation.
- Indulging in sex during the urge for micturation.
- Suppression of urge for urination.
- One who is emaciated and injured.
- Injury *S.Śā 9/12*

मूत्रवह स्त्रोतोदुष्टि लक्षण (Mūtravaha Srotoduṣṭi Lakṣaṇa)

प्रदुष्टानां तु खल्वेषामिदं विशेष विज्ञानं भवति; तद्यथा अतिसृष्टमतिबद्ध प्रकुपितमल्पाल्पमभीक्ष्णं वा बहलं सशूलं मूत्रं यन्तं दृष्ट्वा मूत्रवाहिन्यश्च स्त्रोतांसि प्रदुष्टानिति विद्यात् ।
C.Vi 5/8

The following characteristic features develop due to the vitiation of *mūtravaha Srotas* are as follows :

- Excessive urination
- Complete obstruction for urination
- Urine comes out with difficulty
- Patient passes little quantity of urine frequently.
- Patient passes large quantity of urine associated with pain

तत्र विद्धस्यानद्धबस्तिता मूत्र निरोधः स्तब्ध मेढ्रता च ।
S.Śā 9/12

Injury to *mūtravaha Srotas* develops

- Stiffness in bladder
- Obstruction for urination
- Stiffness or numbness in penis

मूत्रवह स्त्रोतो विकार (Diseases of Mūtravaha Srotas)

- *Prameha*
- *Mūtrkṛcchra*
- *Kāmalā*
- *Jvara*
- *Mūtrāghāta*
- *Aśmari*
- *Pāṇḍu*

पुरीष वह स्त्रोतस् (Puriṣavaha Srotas)

Channels which carry the *puriṣa* is called *puriṣavaha Srotas.*

Synonyms : varcovaha, puriṣavaha

मूल (Root)

पुरीषवहानां स्त्रोतसां पक्वाशयो मूलं स्थूल गुदं च ।

C.Vi 5/8

Puriṣavaha Srotas originates from *pakvāśaya* (large intestines) and *sthūla guda* (rectum)

पुरीषवहे द्वे, तयोर्मूलं पक्वाशयो गुदं च । *S.Sā 9/12*

Puriṣavaha Srotas are two in number and have their root in *pakvāśaya* (large intestine) and *guda* (anus).

निदान (Etiological factors)

संधारणादत्यशनादजीर्णाद्यशनात्तथा ।
वर्चोवाहिनी दुष्यन्ति दुर्बलाग्नेः कृशस्य च ॥

C.Vi 5/21

The following factors brings vitiation in *puriṣavaha Srotas.*

- Suppression of urge for stools
- Consumption of large quantity of food
- Eating during indigestion
- Eating food before the digestion of previous meal
- Whose *Agni* is weak
- Who is emaciated
- Injury

पुरीषवह स्त्रोतोदुष्टि लक्षण (Puriṣavaha Srotoduṣṭi Lakṣaṇa)

प्रदुष्टानां तु खल्वेषामिदं विशेष विज्ञानं भवति; तद्यथा कृच्छ्रेणाल्पाल्प स शब्द शूल मतिद्रवमिति ग्रथितमति बहु चोप विशन्तं दृष्ट्वा पुरीषवहान्यश्च स्त्रोतांसि प्रदुष्टानीति विद्यात् ।

C.Vi 5/8

Due to vitiation in *puriṣavaha Srotas* the following symptoms will appear

- Patient passes stool with difficulty, passes little quantity of stool associated with pain and sound
- Passing of excess watery stool or scybalous stool (mucous with thready)

तत्र विद्धस्यानाहो दुर्गन्धिता ग्रथितान्त्रता च । *S.Śā 9/12*

Due to injury following symptoms develop :

- Distension of abdomen
- Foul smell stool
- Passes thready mucous stools along with intussus-ception of the intestine.

पुरीषवह स्त्रोतो विकार (Diseases of Puriṣavaha Srotas)

- *Atisāra*
- *Visūcikā*
- *Kāmalā*
- *Ajīrṇa*
- *Pravāhikā*
- *Udara Roga*
- *Gulma*
- *Grahaṇi doṣa*
- *Vilambikā*
- *Āmlapitta*
- *Āmavāta*
- *Arśa*
- *Udāvarta*
- *Aśmari*

स्वेदवह स्त्रोतस् (Svedavaha Srotas)

Channels which carry the *sveda* is called *svedavaha srotas.*

मूल (Root)

स्वेदवहानां स्त्रोतसां मेदो मूलं लोम कूपश्च । *C.Vi 5/8*

Svedavaha Srotas originates from *meda* (adipose tissue) and *lomakūpa* (hair follicles).

निदान (Etiological Factors)

व्यायामादतिसंतापच्छीतोष्णाक्रमसेवनात् ।
स्वेदवाहिनि दुष्यन्ति क्रोध शोक भयैस्तथा ॥

C.Vi 5/22

The following factors brings vitiation in *svedavaha Srotas.*

- Heavy exercises
- Excessive exposure to sun and heat
- Indulging or exposure to cold and heat simultaneously
- Anger
- Grief
- Fear

स्वेदवह स्त्रोतोदुष्टि लक्षण (Svedavaha Srotoduṣṭi Lakṣaṇa)

प्रदुष्टानां तु खल्वेषामिदं विशेष विज्ञानं भवति; तद्यथा अस्वेदनमतिस्वेदनं पारुष्यमति श्लक्ष्णतामङ्गस्य परिदाहं लोमहर्षं च । दृष्ट्वा स्वेदवाहिन्यश्च स्त्रोतांसि प्रदुष्टानिति विद्यात् ।

C.Vi 5/8

Due to vitiation in *svedavaha Srotas* following sympto-matology appears.

- Absence of perspiration
- Excess perspiration
- Excessive roughness
- Excessive smoothness
- Burning sensation all over the body
- Horripilation

स्वेदवह स्रोतो विकार (Diseases of Svedavaha Srotas)

- *Kuṣṭha*
- *Sthaulya*
- *Udara Roga*
- *Dāha Roga*
- *Raktapitta*
- *Śitapitta*
- *Koṭha*
- *Prameha*
- *Jvara*
- *MedoRoga*
- *Visarpa*
- *Masūrikā*
- *Udarda*

आर्तववह स्रोतस् (*Ārtavavaha Srotas*)

Channels which carry the *ārtava* is called *ārtavavaha Srotas.*

मूल (Root)

आर्तववहे द्वे, तयोर्मूलं गर्भाशय आर्तववाहिन्यश्च धमन्यः। *S.Śā 9/12*

Ārtavavaha Srotas are two in number and have their origin in *garbhāśaya* (uterus) and *ārtavavāhi dhamani* (*ārtava* carrying vessels).

आर्तववह स्रोतो विकार (Diseases of Ārtavavaha Srotas)

Raktapradara, yonivyāpat (20 types), *jalasrāva (śvetapradara).*

निदान (Etiological factors)

याऽत्यर्थं सेवते नारी लवणाम्लगुरुणि च।
कटूत्यथ विदाहीनि स्निग्धानि पिशितानि च॥
ग्राम्यौदकानि मेद्यानि कृशरां पायसं दधि।
शुक्तमस्तु सुरादीनि भजन्त्याः कुपितोऽनिलः॥
रक्तं प्रमाणमुत्क्रम्य गर्भाशयगताः सिराः।
रजोवहाः समाश्रित्य रक्तमादाय तद् रजः॥
यस्माद् विवर्धयत्यासु रसभावाद विमानता।

C.Ci 30/205-208

The following factors brings vitiation in *ārtavavaha Srotas* are as follows–

- Excessive consumption of salt, sour, heavy, pungent, burning, unctous, meat of acquatic and marshy land animals.
- Excess intake of fatty, sweet preparations, curd and its products, fermented wine etc.
- Agitated *vātādi doṣās* bring abnormality in *garbhāśaya* and develops *garbhāśaya janya vyādhīs.*

आर्तववह स्रोतोदुष्टि लक्षण (Ārtavavaha Srotoduṣṭi Lakṣaṇa)

Colour of the discharge becomes froathy, thin, ununctous, brownish black, pink or like juice of *palāṣa* etc.

वाग्वाहिनी स्रोतस् (*Vāgvāhini Srotas*)

वाग्वाहिनी सिरा संस्तो जिह्वा स्तम्भयतेऽनिलः। जिह्वास्तम्भः स नेत्रान्न पानवाक्येष्वनीशता।

A.S.Ni 15/33

Vāta residing in the path of speech causes disturbance in the tongue like reduced movement of tongue, manifest difficulty in chewing, drinking and talking.

Diseases

Jihvāstambha.

स्तन्यवह स्रोतस् (*Stanyavaha Srotas*)

Channels which carry *stanya* (breast milk) is called *stanyavaha Srotas.*

मूल (Root)

Stanyavaha Srotas have their root in *rasa dhādu.*

निदान (Etiological factors)

अजीर्णासात्म्यविषमविरुद्धात्यर्थ भोजनात्।
लवणाम्ल कटुक्षार प्रक्लिन्नानां च सेवनात्॥
मनः शरीर संतापादस्वप्नान्निशि चिन्तनात्।
प्राप्तवेग प्रतीघातादप्राप्तोदीरणेन च॥
परमान्नं गुडकृतं कृशरां दधिमन्दकम्।
अभिष्यन्दिनि मांसानि ग्राम्यानूपौदकानि च॥
भुत्त्वा भुत्त्वा दिवास्वप्नान्मद्यस्यातिनिषेवणात्।
अनायासादभीघातात् क्रोधाच्चातङ्कर्शनैः॥

C.Ci 30/232-235

Stanyavaha Srotas gets vitiated by adoptation of following etiological factors–

- Consumption of food before the digestion of previous meal
- Intake of unwholesome, irregular and improper foods
- Excess consumption of food
- Excess consumption of salt, sour, pungent, alkaline and pasty food
- Afflicted with both mental and physical miseries
- Not sleeping during night
- Excessive worry
- Suppression of natural urges and forceful elimination of unmanifested urges
- Intake of milk and its products, rice with milk, sweet and its preparations, curd and its products followed by day sleep
- Intake of meat of marshy, domestic and acquatic land animals
- Excess consumption of alcohol
- Lack of physical exercises and afflication with trauma and anger
- Emaciation due to chronic diseases

स्तन्यवह स्त्रोतोदुष्टि लक्षण (Stanyavaha Srotoduṣṭi Lakṣaṇa)

दोषाः क्षीरवहाः प्राप्य सिराः स्तन्यं प्रदूष्य च । कुर्युराष्टविधं भूयो दोषत स्तन्निबोध मे । वैरस्यं फेनसङ्गातो रौक्ष्यं चेत्यनिलात्मके । पित्ताद्वैवर्ण्यदौर्गन्ध्ये स्नेह पैच्छिल्य गौरवम् । कफाद्भवति ।

C.Ci 30/236-238

Due to the consumption of *nidāna* aggravated *doṣās* reaches the *stanyavaha Srotas* (galactic channels) and vitiate the breast milk and causes eight types of morbidity in *stanya* i.e. distasteful, frothy and ununctous due to *vāta duṣṭi* discolouration, foul smelling due to *pitta duṣṭi,* unctous, slimy and heavy due to *kapha duṣṭi.*

स्तन्यवह स्त्रोतो विकार (Diseases of Stanyavaha Srotas)

- *Vātaja stanya duṣṭi*
- *Pittaja stanya duṣṭi*
- *Kaphaja stanya duṣṭi*
- *Stanya nāḍivṛṇa*
- *Stana vidradhi*

शब्दवह स्त्रोतस् (Śabdavaha Srotas)

यदा शब्दवहं स्त्रोतो वायुरावृत्य तिष्ठती ।
शुद्धः श्लेष्मान्वितो वाऽपि बाधिर्यं तेन जायते ।

S.Ni 1/88

Aggravated *vāta* enters *śabdavaha Srotas* either alone or in association with *kapha* & produces *bādhirya.*

Diseases

Bādhirya

मनोवह स्त्रोतस् (Manovaha Srotas)

Channels which carry the *mana* (mind) is called *manovaha Srotas.*

स्त्रोतांसि मनोवहानीति हृदयाश्रिता दश धमन्यः । *M.Ni 20/5*

मूल (Root)

स्त्रोतांसि मनोवहानीत्यनेन हृदय देश सम्बन्धि धमन्यो विशेषेण मनोवहा दर्शयत्ति ।

C.Ci 9/3 (Cakrapāṇi)

Manovaha Srotas have their root in 10 vessels which are arising from heart and carry the mental stimulus to different parts of the body.

निदान (Etiological factors)

विरुद्ध दुष्टाशुचि भोजनानि प्रधर्षणं देवगुरु द्विजानाम् ।
उन्मादहेतुर्भयहर्षपूर्वो मनोऽभिघातो विषमाश्च चेष्टाः ।

C.Ci. 9/4

- Intake of unwholesome, polluted and uncleaned foods and drinks
- Indulging in sinful acts by insulting gods, preceptors and intellectual individuals who are well versed in rituals.
- Excessive fear and exhilaration
- Erratic behaviour
- Mind is afflicted by predominance of *rajas* and *tamas.*
- Aggravation and agitation in *vātādi śāririka doṣās.*
- Extreme emaciation
- Who is suffering from chronic disorders and suffering from ill health
- Affliction of mind again and again by passion,

anger, greed, excitement, fear, attachment, exertion, anxiety and grief

- When the body is subjected to excessive physical assault

.दोषाः प्रकुपिता हृदयमुपसृत्य मनोवहानि स्त्रोतांस्यावृत्य जनयन्त्युन्मादम् । *C.Ni. 7/4*

Due to above etiological factors mind gets severly affected and loses its intellect balance. At the same time aggravated *doṣās* enter the *hṛdaya* and obstruct the channels of mind & manifest *unmāda*.

तैरल्पसत्वस्य मलाः। प्रदुष्टा बुद्धेर्निवासं हृदयं प्रदूष्य ।
स्त्रोतांस्यधिष्ठाय मनोवहानि प्रमोहयन्त्याशु नरस्य चेतः ।

C.Ci 9/5

Due to the consumption of above etiological factors *śāririka* as well as *mānasika doṣās* become agitated and enter the *hṛdaya* of the patient who is having inferior *satva* and block the channels of mind & manifest *unmāda*.

मनोवह स्त्रोतोदुष्टि लक्षण (Manovaha Srotoduṣṭi Lakṣaṇa)

उन्मादं पुनर्मनोबुद्धिसंज्ञाज्ञानस्मृतिभक्तिशीलचेष्टाचारविभ्रमं विद्यात् । *C.Ni 7/5*

Insanity is characterised by the perversion of mind, intellect, consciousness, knowledge, memory, desire, manners, behaviour and conduct.

मनोवह स्त्रोतो विकार (Diseases of Manovaha Srotas)

Unmāda, kāma, lobha, irṣyā, cittodvega, harṣa, krodha etc.

संज्ञावह स्त्रोतस् (Saṁjñāvaha Srotas)

Channels which carry *buddhi* (intellect) is called *sajñāvaha Srotas.*

संज्ञा बुद्धिः । *C.Su 24/25 (Gañgādhara)*

मूल (Root)

तदाश्रयत्वात् केवलबुद्धिः स्त्रोतसाञ्च ।
भावादत्र संज्ञाशब्देन मन उच्यते ।

C.Su 24/25 (Gañgādhara)

संज्ञावहानीति संज्ञाहेतुमनोवहानि ।

C.Su 24/25 (Cakrapāṇi)

Saṁjñāvaha Srotas have their root in *hṛdaya.*

निदान (Etiological factors)

मिथ्यातियोगेन्द्रियार्थकर्मणामभिसेवनात् ।
विरुद्धमलिनाहारविहारकुपितैर्मलैः ।
वेगनिग्रहशीलानामहिताशुचिभोजिनाम् ।
रजस्तमोभिभूतानां गच्छतां च रजस्वलाम् ।
तथा कामभयोद्वेगक्रोधशोकादिभिर्भृशम् ।
चेतस्यभिहते पुंसामपस्मारोऽभिजायते ।

S.Utt. 61/4-6

The following factors manifest abnormality in mental functions leading to development of *apasmāra.*

- Improper or excess utilization or nonutilisation of sense organs, intellectual blasphemy and time.
- Incompatible & impure diet and abnormal activities
- *Doṣa* aggravating factors
- Suppression of natural urges
- Intake of unwholesome and unclean foods
- Dominant *rajo* and *tamo guṇa*
- Sexual intercourse during menstruation
- Lust, fear, agitation, anger, grief, sorrow

संज्ञावह स्त्रोतोदुष्टि लक्षण (Symptoms of Disturbed Saṁjñāvaha srotas)

संज्ञावहेषु स्त्रोतः स दोषव्यात्पेषु मानवः ।
रजस्तमः परीतेषु मूढो भ्रान्तेन चेतसा ।
विक्षिपन् हस्तपादं च विजिह्मभ्रूर्विलोचनः ।
दन्तान् खादन् वमन् फेनं विवृताक्षः पतेत् क्षितौ ।
अल्पकालान्तरं चापि पुनः संज्ञां लभेत सः ।
सोऽपस्मार इति प्रोक्तः ।

S.Utt 61/8-10

When *saṁjñāvaha srotas* gets afflicted with *doṣās* (both *śāririka* and *manodoṣās*) as a result person become senseless due to disturbed mind leading to development of violent movements of the arms, legs, brows and eyes and grinds teeth. Omit froath from mouth, falls on the ground with eyes wide open and regain consciousness after short period it is called *apasmāra.*

Diseases

- *Apasmāra*
- *Mūrcchā*
- *Mada*
- *Sanyasa*

स्वरवह स्रोतस् (*Svaravaha Srotas*)

Channels which carry *śabda* is called *svaravaha srotas.*

मूल (Root)

स्वरवहेषु स्रोतः सु शब्दवाहिनीषु धमनीषु, वे वातादयः । *S.Utt 53/3 (Dalhaṇa)*

Svaravaha srotas have their root in *śabdavāhi dhamani.*

स्रोतः सु स्वरवहेषु चतुर्षु यदुक्तं सुश्रुते द्वाभ्यां भाषते, द्वाभ्यां घोषं करोति । *M.Ni 13/7 (Madhukoṣa) S.Śā 9/5*

Svaravaha srotas are four in number i.e. two for speech and two for sounds.

निदान (Etiological factors)

अत्युच्च भाषणविषाध्ययनातिगीतशीतादिभिः प्रकुपिताः पवनादयस्तु । *S.Utt 53/3*

The following factors brings vitiation in *svaravaha srotas.*

- Speaking with high pitched tone for longer duration
- Consumption of poison
- Excess study
- Excess singing
- Intake of cold substances

स्वरवह स्रोतोदुष्टि लक्षण (Svaravaha Sroto Dusṭi Lakṣaṇa)

स्रोतः सु ते स्वरवहेषु गताः प्रतिष्ठां हन्युः स्वरं भवति चापि हि षड्विधः सः । *S.Utt 53/3*

Due to the consumption of above etiological factors aggravated and agitated *vātādi doṣās* enters *svaravaha srotas* and destroy speech and voice.

Diseases

- *Vātaja svarabheda*
- *Pittaja svarabheda*
- *Kaphaja svarabheda*
- *Sannipātaja svarabheda*
- *Medaja svarabheda*
- *Kṣayaja svarabheda*

Critical Evaluation of the Srotas

Introduction– The concept of *srotas* is defined vividly and scientifically in *Āyurvedic* texts. It is stated that any corporeal entities do not arise or decay without *srotas.* It is defined as the transporting passages of *dhātus* undergoing transformation. *Caraka* mentions that the person is the aggregate of *srotas* because of their pervasiveness and diffusiveness that aggravate and pacify *doṣa.* There are divergent openions regarding the number of *srotas;* some say they are innumerable and to some they are numerable and describes along with classification in their respective *saṁhitā.*

It may be considered as the channels (micro and macro) on the basis of morphology. The term *srotas* is derived from the root *su sravaṇo* means that which exude; ooze; filter; permeate. These channels function as the medium through which the biological materials, nutrients and excretables flow from and the *koṣṭha* and the exterior. It refers both to the gross major channels like respiratory tract, gastro intestinal tract, genitourinary tract, etc. micro channels like vessels, capillaries, lymphatics, etc., and also to the molecular channels like the permeability of membranous pores of cell membrane, etc.

It is the pre-requisite for the maintenance of good health because without healthy *srotas* body cannot grow normally. Any slight disturbance at the level of *srotas,* either structurally or functionally, leads to *saṁmūrchanā doṣa* and *duṣya* and as a result disease manifests inside the body. Competent *srotas* is the root cause for a healthy body; *samsodhana* therapy is recommended for removing the existing *malās* from the body and thereby maintains the healthy status of *srotas.*

Synonyms– *Śirā* (vein), *dhamani* (artery), *rasāyani* (lymphatic ducts), *rasavāhini* (capillary), *nāḍi* (tubular conduits), *panthāna* (passages), *mārga* (pathways, tracts), *śarirachidra* (body orifices), *samvṛtasamṛtāni* (open or blind passages), *sthāna* (sites), *a śaya* (repertories) and *niketa* (resorts) are the synonyms of *srotasas* (channels).

Structure– The orifices of the *srotas* are very small, wide, long and far, like those in the lotus stalk; through them, *rasa* 'nourishes' the body. The colour and form of the *srotas* would be similar to the *dhātu* they transport; they may be cylindrical, 'either *sṭhūla*' (gross, macroscopic) or *aṇu* (atomic or microscopic), *dīrgha* (long) or *prathāna* (reticulated).

Importance–

1. The indulgence of anomalous diet and activities leads to the abnormality in the *srotas,* which is the root cause for any disease; in other words, healthy *srotas* are the source of a good health.
2. The *srotas* subserve the needs of transportation. The *dhātus* transported through the *srotas* are constantly subjected to (metabolic) transformation. Without *srotas* no body-structure can grow and develop or waste and degenerate.
3. *Vāta, pitta* and *kapha* move through the *srotas;* all the channels of the body cater the needs for these movements. So long as these channels of circulation perform their normal functions, body would be free from the diseases.
4. The abnormality in the *dhātu* brings about abnormality in the *srotas*. The vitiated *srotas* further vitiate *dhātu,* as a vicious circle. All these are result due to the abnormality of *agni,* thus, the lifespan, health, strength, nourishment, etc., all are dependent on *agni.*
5. There is a separate chapter on *srotas* in the *Caraka-Saṁhitā,* which signifies the importance of *srotas.*
6. There is as much diversity in the *srotas* as there is in the elements that compose the structure of the body.
7. The factors that cause *prakopa* (excitation) or *śamana* (alleviation) of *doṣa* are being transported by *srotas.*
8. The channels of circulation carry the *dhātu* (tissue-elements of their constituents) that are subjected to transformations.
9. As per the openion of the *Śalyatantra* specialists, pains of special kinds, which may manifest on account of either the piercing of or injury to *srotas* that present in certain special parts of the body, are important to gain knowledge of the prognosis of such conditions.
10. *Kāyācikitsā* recognizes *srotas* that are spread throughout the body which include extremely tiny ones. Any pathological involvement of them may manifest subtle kinds of symptoms that may not be recognized or be of help in the assessment of prognosis in such involvements.
11. These are channels of microscopic dimensions, which transport the body nutrients and through which the oozing of fluids takes place.
12. *Rasa* spreads throughout the body through very fine pores of *srotas,* which are distributed extensively in the body very much like the minute channels present in the lotus stem.
13. *Srotas* are two fold in nature i.e. serve as conduits through which both *prasāda* (nutrient) *dhātu* as well as *Maladhātu* (waste-products or products of degradation) are transported, and also serve as structures through the pores of which *prasādadhātu* and *Mala* pass to and fro from the *sthāyidhātu.*
14. The *hṛdaya, dhamani, stotas* and *śirā* (including *rasavaha srotas*) constitute a single circulatory unit, which regulate the proper flow of blood and supply nutrition and clear of the waste products from *sthāyidhātus.*
15. *Srotas* include structures that secrete and excrete like kidney tubules.
16. The nutrient substances nourish the *dhātu* under *pāka* by the *uṣma* of *dhātu.* They are then made available to the *dhātu* through their own *srotas.*
17. *Srotas* do not transport *sthiradhātu* but only the *dhātu,* which are undergoing metabolic transformations. The *dhātu,* which are formed consecutively, from the *poṣakadhātu,* are the *sthāyidhātu.* The nutrient material of a particular *dhātu* does not nourish it through a

srotas other than its own, because of the location of the *poṣyadhātu,* in different parts of the body.

18. Starling concept, which assumes the ultra filtration of blood constituents is modified to include the concept of a porous capillary wall, with pore numbers, dimensions and shapes varying in capillaries of diverse tissues and operation of a rapid diffusion process across the capillaries.
19. The theory of semi permeability may be well correlated with *srotas* because of the property of being permeable to some substances and impermeable to others.
20. If ion-concentration is greater on one side than the other, more ion on the average would migrate into the less diluted side, thus equalize concentrations.
21. There are 4 types of characteristic abnormalities that arise in the *srotas* viz. *atipravṛtti* (an excess flow) or *sañga* (obstruction) or *vimārgagamana* (the flow of contents through channels other than its own) or *sirāgranthi* (any kinds of abnormal growths inside the vessels).
22. All pathological lesions, either acute or chronic, have their origin in the *srotas.*
23. *Agniduṣṭi* or *agnimāndya* of the cells that compose the *srotas* lead to *srotovaiguṇya* or functional disturbance of the *srotas,* which may be followed by the structural change in them, this may in turn lead to *srotorodha* which in turn brings about an interaction between *doṣā* and *duṣya* at the site of the defect or arrest.

Aetiological Factors for the Vitiation of Srotas

1. Food and activities aggravate the *doṣā* and go contrary to the well being of *dhātu* vitiating the channels.

2. Day sleep and fatty foods have features identical to those of the fat; the former one vitiate the latter. Thus the term *dhātubhirviguṇa* does not mean that food and regimens should attribute opposite to those of the *dhātu,* they only unwholesome for these *dhātu.*

Classification – *Srotas* are classified mainly into two groups viz. *bāhya* and *abhyantara srotas.*

Bāhysrotasas– The *srotas,* which have opening outside and are seen (externally) with the naked eye are called *bāhyasrotas.* Various *ācāryas* classify these in different ways; according to *Śuśruta,* it is 9 in male and 12 in female and to *Śārañgadhāra* it is 10 in male and 13 in female.

The *bahirmukha srotas,* which communicate with external air are 9 in number i.e. ear - 2, eyes - 2, mouth - 1, nostrils - 2, anus - 1 and urethra - 1; in females, it is 13 i.e. openings in the breast - 2 and vaginal orifice - 1.

Abhyantara Srotas– According to *Caraka, yogavāhi* or *abhyantara* (internal orifices) are 13 in number with their opening inside. They are– *prāṇavaha, annavaha, udakavaha, rasavaha, raktavaha, māmsavaha, medovaha, asṭhivaha, majjāvaha, śukravaha, puriṣavaha, mūtravaha* and *svedavaha. Suśruta* doesn't included *asṭhivaha, majjāvaha* and *svedavāha srotas* but included *ārtavavaha srotas.*

Conclusion– The role of *srotas* in the maifestation of disease is well discussed in almost all *Āyurvedic* texts; so also its importance in the maintenance of normal physiological functions i.e. the basis for good health.

A complete knowledge of *srotas* is a must for an *Āyurvedic* physician to approach a patient in a holistic way. Manifestation of a disease occurs in the body as a result of the defective *srotas* of the body. So any defect of *srotas* must be corrected quickly, for the restoration of normal health. Here a collective approach of the views of various *ācāryas* regarding *srotas* is specified.

Critical understanding of Kha vaiguṇya and srotoduṣṭi

Kha vaiguṇya and *srotoduṣṭi* are an integral and indispensible stage in the process of manifestation of a disease. Among these two the *srotoduṣṭi* is very frequently recognized and management is intended consequently. Regarding the concept of *kha vaiguṇya,* its recognition, its contributory factors, its significance in treatment and its consequence in disease manifestation is often ignored.

Sroto duṣṭi

Srotoduṣṭi causesg enesis of a disease and their normalcy brings the health. *Sroto duṣṭi* is caused by the *āhāra* (diet) and *vihāra* (activities) which aggravates the *doṣās* and which are having properties opposite to *dhātus*.

Although there is no direct reference for the definition of *srotoduṣṭi* found any where in *samhitās* but the word exclusively described in *Caraka samhitā* while explaining the etiological factors which brings abnormality in *srotas*. According to *Caraka* there are 13 types of *abhyāntara* srotases (internal structures) and their specific causative factors for each are described.

The symptoms of each *srotoduṣṭi* are presented but *rasādi sapta srotoduṣṭi lakṣaṇās* are not mentioned separately. But, the *ācharya* has hinted that, they are nothing but the *dhātu pradośaja vikaras* only because these arise from *dhātuvaha srotoduṣṭi.*

Srotoduṣṭi Lakṣaṇās

Four symptoms and signs of *srotoduṣṭi* takes place viz. *Atipravritti* (increased activity), *Saṅga* (obstruction), *Sirāgranthi* (aneurysm), and *Vimārgagamana* (opposite direction). These four types may occur either independently or in combination. Among four, *saṅga* gives rise to the majority of the diseases.

The *dhātus* and their respective *srotas* generally share a very close association as a result the *pradoṣa* or *duṣṭi* in the *srotas* may leads to *duṣṭi* in the *dhātus* and vice versa.

Kha vaiguṇya

The word *kha vaiguṇya* is a vividly found in classical texts of *Āyurveda. Vyāna vāta* impel the *āhara rasa* (final product of digestion) through *hṛdaya* (Heart) to whole body. While circulating the propelled *rasa* lodges in the region of susceptibility i.e. kha *vaiguṇya* leading to development of diseases.

Suśruta mentioned that *kupita* (aggravated) *doṣās* circulate all over the body and produce diseases when they come across the seat of susceptibility (kha *vaiguṇya*).

The word kha *vaiguṇya* is described as *sroto vaiguṇya* in commentary of *Chakrapaṇi* and *Dalhaṇa* while *Aruṇadutta* expressed *kha vaiguṇya* as *sroto duṣṭi.*

Discussion

Kha Vaiguṇya - Kha refers to *Srotas* and *Vaiguṇya* to *Vigunata* which are both detailed below.

Srotas

Sravanāt srotāmsi. The structures, that cause *sravana* (secretion) are called as *srotases.*

Vaiguṇya (Vigunata)

Any deviation from its normal *karma* (functions) and *guṇa* (characteristic properties) is known as vigunata. Hence *vigunata* (abnormality) of *srotas* may be broadly classified as *karmatah vaiguṇya* and *gunatah vaiguṇya.*

1. *Karmatah vaiguṇy a* : It is brought about by *Guṇa vaiguṇya* of *srotas, Dhatwagni māndya or vṛddhi,* Influence of *purva* and *para dhatu* and *ama.*

   a. *Guṇa vaiguṇya* of *srotas* : In case of *bīja duṣṭi* (genetic), the *srotas* become either anatomically or functionally abnormal and as a result it cannot carry out its normal functions.

   b. *Dhātvāgni māndya or vṛddhi* : In case of *dhātvāgni* abnormality the conversion inside the *srotas* is incomplete leading to *sama dhātu* or *dhātu vṛddhi* or *apakva dhātu utpatti* as result abnormality inside the *srotas* occurs, leading to *karma vigunata*

   c. **Influence of *pūrva* (previous *dhātu*) and *para dhātu* (subsequent *dhātu*) :** If *purva dhātu* (previous *dhātu*) is *sama* (improperly converted), the *uttara dhātu* (subsequent *dhātu*) will also be *sama* because *pūrva dhātu* has an influence on the *para dhātu.*

Forexample – *sāma rasa* – resulting in *utpatti* of *sāma rakta dhātu* and so on. Due to improper *poṣaka amśa* (*āhāra rasa* /essential nutrients), the *srotas* (channels) and *karma* (functions) of *uttara dhātu* (subsequent *dhātu)* also becomes abnormal. Just like, the leakage from gutter pipe/sewage pipe when released into the water supply pipe pollutes the whole drinking water.

d. Āma : development of ama either by *jaṭharāgnimāndya* or *dhātvāgni māndya* is the main culprit to cause the obstruction inside the *srotas*. Normal *Srotas* is a hollow structure and it may be *sthūlau* (macro channels) or *sukṣma mukhi* (micro channels).The paths of circulation transmit the *dhātus* (tissue elements or their constituents) undergoing transformation to their destination. The term "*Pariṇāmamāpadyamānam*" indicates that the channels carry such of the tissue elements as are undergoing transformation from their preceding states; viz. *rasa* (plasma, WBC, lymph etc) to their subsequent states; viz. *rakta* (blood) etc. *Ayanārthena*" signify that the channels of circulation do not carry the *sthira* (stable) *dhātu*s, but, only such of the mobile *dhātu*s, as are destined to be transformed to another *dhātu* situated elsewhere, are carried by them. Hollowness (*souṣirya*) is the characteristic property of srotas due to presence of *āma* the normal characteristic property of *srotas* will no longer be present leading to malformation as a result *karma vaiguṇya* (abnormal functions) occurs. Ultimately *vahana* (transportation) of *pariṇāma māpadhyamāna dhātu* (ultimate end product of digestion) will be interrupted.

2. Guna vaiguṇya (anatomical and physiological defects)

Prākṛta Guṇa of srotas (Structure)

The orifices of the *srotas* are very small, wide, long and far, like those in the lotus stalk; through them, *rasa* 'nourishes' the body. The colour and form of the *srotas* would be similar to the *dhātu* they transport; they may be cylindrical, 'either *sthūla* (gross, macroscopic) or *aṇu* (atomic or microscopic), *dirgha* (long) or *prathāna* (reticulated). Any divergence from the above qualities is the *guṇa vaiguṇya* of *srotas* (change in the structure of the *srotas).*

Guṇa vaiguṇya (anatomical and physiological defects) can occur by following causes-

a. *Bīja duṣṭi* (Genetic defect) **:** The characteristic structural property of the *srotas* is predetermined by the excellence of the genes and defective gene may cause anatomical and physiological deviation/defects in the *srotas*, leading to development of abnormalities in the body.

b. Defective formation of *dhātu* : Defective formation of *dhātus* by any means leads to vitiation inside the *srotas*.

Srotoduṣṭi

Srotoduṣṭi means to vitiation of *srotas* leading to many abnormalities in the *srotas* and it is due to abnormal *doṣās* and *dūṣyās*

Once the *doṣa dūṣyāsammūrcana* happens in the *srotas,* it causes *srotoduṣṭi* resulting in development of *dhātu pradoṣaja vikāra, Indriyā pradoṣaja vikāras etc.*

Circulating *doṣās and dūṣyās* that deposit in *srotas* due to *kha vaiaguṇya* mentioned as stage of *sthānasamśraya,* at this stage there isinteraction between the *doṣās* and *dūṣyās* causing the manifestation of *vyādhi (*disease*)*. The stage of interaction between *doṣa* and *dūṣya* and its consequent reactions might be considered as the *srotoduṣṭi*. The phase of *kha vaiguṇya* and *srotoduṣṭi* are taking place in the *sthānasamśraya* stage.

Is Srotoduṣṭi same as srotovaiguṇya?

The both words *Kha vaiguṇya* (*sroto vaiguṇya)* and *srotoduṣṭi* are similar. Some people opinion is that *Kha vaiguṇya* (*sroto vaiguṇya)* may perhaps be considered as precursor to the *sroto duṣṭi*. Some are saying that *Sroto vaiguṇya* is less severe and is only a functional deviation and will not cause a disease but may predispose for disease manifestation. Where as *duṣṭi* in the *srotas*, is severe form of *sroto vaiguṇya* and will certainly cause a disease. If *kha vaiguṇya* and *srotoduṣṭi* are identical, i.e. if it is believed that there is abnormality in both the cases to certain extent in varying degrees, then *duṣṭi* in *srotas* should give rise to appearance of symptoms and signs i.e. *srotoduṣṭi janya lakṣaṇās* or *pradoṣaja vikāra*. It is not essential that a disease has to be present, wherever there is *kha vaiguṇya* (if it is thought to be milder degree of *srotoduṣṭi*). On the contrary the *srotoduṣṭi surely* cause the manifestation of disease.

Difference between *Kha Vaiguṇya* (*srotovaiguṇya*) & *Srotoduṣṭi* :

S.no.	Kha *Vaiguṇya (srotovaiguṇya)*	*Srotoduṣṭi*
1	Manifest before *doṣa dūṣya sammūrchanā*	Manifest after *doṣa dūṣya sammūrchan*
2	It is necessary for *Sthānasamśrayāvasthā* of *Kriyākāla*	It is necessary for *Vyaktāvasthā* of *Kriyākāla*
3	It may manifest by minor etiological factors	It may manifest by complex etiological factors
4	This state is inference state – *anumāna gamya*	This state is direct observation – *Pratyakṣa gamya*
5	*Pūrvarūpa* (premonitory signs and symptoms) observed in this state	*Rupa* (signs and symptoms of the disease) observed in this state
6	*Doṣa sañcaya, prakopa,* and *prasara lakṣṇās* observed	Four symptoms and signs of *srotoduṣṭi* are observed viz. *Atipravṛtti* (increased activity), *Sanga* (obstruction), *Sirāgranthi* (aneurysm/ haemorrhoids/varicose veins), and *Vimārgagamana* (opposite direction)

The word *Kha vaiguṇya* is used in the context of explaining the course of development of disease. The circulating *doṣās* get lodged in a place of susceptibility i.e. *kha vigunya*, which is caused either by genetic defect and other environmental factors and so on. After having stuck there, they remain stay there until they get appropriate time for the manifestation of a *vyādhi* (disease). If the person continuously indulges the etiological factors which brings vitiation in *srotas* leading to *vaiguṇya* in the *srotas* andproduce *pradoṣaja vikāra* or *vyādhi*. Due to *vaiguṇya* if milder form of *srotoduṣṭi* develops it may not cause any *lakṣaṇa* or disease because lack of prominent interactions between *doṣa* and *dūṣya*. Prominent interactions between *doṣa* and *dūṣya* provide the favourable environment to cause a disease.

It is mentioned in the texts that once there is a *duṣṭi* (*doṣa duṣṭi*) in *dhātu* and *srotas* leading to development of symptoms and signs of that particular disease. Such opinionhas been observed in *vividhaṣita pitiya* chapter, *doṣa duṣṭi* in *dhātu dhātuvaha srotas* – leading to *pradoṣaja vikāra*. This is true in case of *pradoṣaja vikara* i.e. the role of *doṣa duṣti* is primary in causing the damage to *dhātus* and *srotas* as. At this juncture *dhātus* might be normal butrole of *doṣa duṣti* in *dhātu* and *srotas* is playing important role in diseases manifestation. Therefore some scholars say that *srotoduṣṭi* and *kha vaiguṇya* are not identical, but are intimately connected.

Primary and secondary *kha vaiguṇya* are the two important causative factors to cause srotoviaguṇya : The creation of *bīja duṣṭi janya kha vaiguṇya* is due to the influence of defective *genes*. The secondary *kha vaiguṇya* results due to deeds done by individuals after birth in addition to genetic one.

Srotas–Modern correlation :

1. *Prāṇavaha srotas*	Cardio-Respiratory System
2. *Udakavaha srotas*	Portal vein and thoracic duct
3. *Annavaha srotas*	Gastro Intestinal tract
4. *Rasavaha srotas*	Lymphatics and Cardio-vascular system
5. *Raktavaha srotas*	Circulatory system including liver and spleen
6. *Māmsavaha srotas*	Capillaries supplying the muscles
7. *Medovaha srotas*	Capillaries supplying the muscles
8. *Asthivaha srotas*	Capillaries going to bone marrow
9. *Majjāvaha srotas*	Bone marrow pores
10. *Śukravaha srotas*	Reproductive system including seminiferous tubules and ducts deferens
11. *Mūtravaha srotas*	Urinary system
12. *Purișavaha srotas*	Caecum and colon
13. *Svedavaha srotas*	Ducts of sebaceous glands
14. *Ārtavavaha srotas*	Female reproductive system including uterine vessels
15. *Stanyavaha srotas*	Tubules of lactiferous ducts
16. *Manovaha srotas*	Nervous system along with its nerve supply
17. *Vātavaha srotas*	Nervous pathway
18. *Samjñāvaha srotas*	Sensation carrying pathways
19. *Svaravaha srotas*	
20. *Śabdavaha srotas*	
21. *Vāgvāhini Srotas*	
22. *Pittavaha Srotas*	
23. *Kaphavaha Srotas*	
24. *Sarvavaha Srotas*	
25. *Ojovaha Srotas*	
26. *Indriya prāṇavaha srotas*	
27. *Buddhivaha srotas (Sirā)*	

CHAPTER
9

Concept of Ama

अम्यते गम्यते पक्वाद्यर्थम् इति आमः।
Āma is the outcome of improper digestion

इषत् अम्यते पच्यते इति आमः।
Incomplete or partial digestion of food leads to *āma*

अम्यते पीड्यते स्त्रोतोसमूहो अनेन इति आमः।
Product which brings discomfort in *Srotas* is *āma*

ग्रहणीमाश्रितं दोषं विदग्धाहारमूर्च्छितम्। सविष्टम्भप्रसेकार्ति विदाहारुचिगौरवैः आमलिङ्गन्वितं दृष्ट्वा।

C.Ci 15/73-74

Abnormal *doṣa* present in *grahaṇi* manifest improperly digested food as result salivations, constipation, pain, burning sensation, anorexia and heaviness manifest as symptoms of *āma*.

आमस्यापक्वस्य लिङ्गरन्वितमिति आमलिङ्गान्वितम्।

C.Ci 15/73-74 (Cakrapāṇi)

Symptoms of undigested food material is the symptoms of *āma*.

सामे रसे इति अपक्वे रसे। आमश्चात्रापक्वरूप एवं इष्ठः, आहाररसस्य रससम्बन्धेन शरीर व्यापकत्वात्।

C.Ci 15/73-74 (Cakrapāṇi)

Sāma rasa means improperly processed substance or tissues. It is the *sāma rasa* which circulates all over the body not the *ādhya rasa*.

आमाशयस्थः कायाग्नेदौर्बल्यदविपाचितः।
आद्य आहार धातुर्यः स आम इति कीर्तितः।

M.Ni 25/1-5 (Madhukoṣa)

If *kāyāgni* fails to perform normal functions leads to accumulation of undigested food material inside *āmāśaya,* which is the initial *rasadhātu* is called *āma*.

अविपक्वमसंयुक्तं दुर्गन्धं बहु पिच्छिलम्।
सदनं सर्वगात्राणामाम इत्यभिधीयते।

M.Ni 25/1-5 (Madhukoṣa)

Food which is improperly digested having foul smell, excess unctuousness and develops lethargy in all body organs is called *āma*.

आहारस्य रसः शेषो यो न पक्वोऽग्निलाघवात्।
स मूलं सर्वरोगाणामाम इत्यभिधीयते।

M.Ni 25/1-5 (Madhukoṣa)

Due to hypofunctioning of *Agni* proper digestion of food doesn't takes place leading to formation of *āma*, which is responsible for the manifestation of almost all diseases.

आममन्नरसं केचित्, केचित्तु मलसञ्चयम्।
प्रथमां दोष दुष्टिं च केचिदामं प्रचक्षते।

M.Ni 25/1-5 (Madhukoṣa)

- Some people accept *āma* as improperly digested food.
- Some other scholars considers accumulated *Mala* as *āma*.
- Others says that it is the primary stage for the vitiation of *doṣa*.

जाठरानल दौर्बल्यात् अविपक्वस्तु यो रसः।
स आमसंज्ञको देहे सर्व दोष प्रकोपणः।

C.Ci. 15/44 (Hemādri)

Impaired digestion and metabolism due to hypofunctioning of *jaṭharāgni* is called *āma* and it excacerbates all the *doṣa*.

ऊष्मणोऽल्पबलत्वेन धातुमाद्यं अपाचितम्।
दुष्टमामाशयगतं रसमामं प्रचक्षते।

A.H.Su. 13/25

Due to weakness in *Agni ādhya rasa* becomes immature, improperly metabolised substance called *āma*, which manifests in *āmāśaya*.

अपच्यमानं तदन्नं शुक्तत्वमम्लत्वं याति।

C.C. 15/44 (Gaṅgādhara)

शुक्लत्वमिति (आमताम) आम्लत्वम्।

C.C. 15/44 (Cakrapāṇi)

Partially digested food transformed into sourness is called *āma*.

प्रदुष्टामबद्धमार्गो इत्यत्रपक्वाहारोऽन्न रसोवा अपक्वं आम उच्यते। *C.Vi. 2/8 (Cakrapāṇi)*

Disturbed functions of *Agni* leads to formation of underprocessed *anna rasa* and which is immature is called *āma*.

अन्ये दोषेभ्य एवातिदुष्टेभ्योऽन्योन्यमूर्च्छनात्।
कोद्रवेभ्यो विषस्येव वदन्त्यामस्य सम्भवम्।
A.H.Su. 13/26

Others opine that *āma* forms after mixing with agitated *doṣās* like a formation of poison after mixing with various kinds of *kodrava*.

यत्रस्थमामं विरुजत्तमेव देशं विशेषेण विकारजातैः।
दोषेण येनावततं स्वलिङ्गैस्तं लक्षयेदामसमुद्भवैश्च॥
S.Utt. 56/10

Wherever *āma* goes it gives rise to pain and initiates reactions among *doṣās, duṣyas*, *Srotas* etc. present in that particular area and it can be understood by the presence of symptoms due to *āma*.

अजीर्णान्नरजो जातः क्रमशः सञ्चितश्च यः।
आमसंज्ञां स लभते शिरोगात्ररुजाकरः॥
Yogaratnakar 19/5

Due to impaired *Agni* food does not digest properly and develop the unprocessed Rasa and it gradually accumulated inside the *Āmāśaya* is known as *Āma*. It is characterised by headache and pain all over the body.

आमदोष या आम प्रदोष (Āma Doṣa or Āma Pradoṣa)

आमप्रदोषेति आममभ्यवहृतमपक्वं तेन कृतः प्रदोष इत्यामदोषः। *C.Ci. 2/8 (Gaṅgādhara)*

The resulting action of *āma* inside the body is called *āma doṣa*.

आमस्यापक्वस्याहारस्य प्रदोषः आम प्रदोषः। आमम् अपक्वं सद् दुष्टं दोष संपर्कात् शरीरं दूषयतीति ज्ञेयम्।
C.Ci. 2/8 (Cakrapāṇi)

Manifestation of certain reactions inside the body due to underprocessed *anna rasa* is called *āma pradoṣa*. When *āma* comes in contact with *doṣa* leading to vitiation of *śarīra* by manifesting various kinds of diseases.

आम प्रदोष भेद (Āma Pradoṣa Bheda)

तं द्विविधमामप्रदोषमाचक्षते भिषजः विसूचिकां अलसकं च।
C.Vi. 2/10

Mainly two types of *āmapradoṣa* manifests namely

1. विसूचिकां - *Visūcikā*
2. अलसकं - *Alasaka*

साम (Sāma)

आमेन तेन संपृक्ता दोषा दूष्यश्च दूषितः।
सामा इत्युपदिश्यन्तो ये च रोगास्तदुद्भवाः॥
A.H.Su. 13/24

Sāma is a condition manifests due to amalgamation of *doṣa* and *duṣya* resulting into formation of various kinds of disorders.

आमविष (Āmaviṣa)

वातादयः प्रकुप्यन्ति तेषामन्यतमो यदा।
मन्दिकरोति कायाग्निमग्नौ मार्दवमागते।
एतान्येव तथा भूयः सेवमानस्य दुर्मतेः।
यत्किञ्चिदशितं पीतं देहिनस्ताद्धि दह्यति।
विदग्धं शुक्ततां याति शुक्तमामाशये स्थितम्।
K.Khi. 16/7-9

Due to the consumption of *nidana,* which are capable of excacerbating *doṣa* and bringing mildness in *Agni's*, after this whatever is again eaten or drunk by ignoramous person, the same becomes improperly digested, this transformed into sourness in *āmāśaya* is called *āmaviṣa*.

विरुद्धाद्यशनाजीर्णाशनशालिनः पुनरामदोषमामविष मित्याचक्षते भिषजः। विषसदृशलिङ्गत्वात् तत् परासाध्यं, आशुकारित्वात् विरुद्धोपक्रमत्वात् चेति। *C.Vi. 2/12*

If person consumes incompatible foods, eat before the digestion of previous meals, during the state of indigestion, whatever is taken by the individual at this stage gets transformed to sourness. Leading to development of following sentence.

1. विषसदृशलिङ्गत्वात् - *Āma* liberates certain poisons in *āmasaya* leading to manifestation of symptoms of food poisoning.
2. असाध्यं- Incurable
3. आशुकारित्वात् - Onset become insidious
4. विरुद्धोपक्रमत्वात् - Treatment becomes antagonist.

Antagonisity of treatment is due to changes in the qualities of *āma* and *āmaviṣa*.

विरुद्धोपक्रमत्वादिति आमपेक्षया यदुष्णं क्रियते तद्विषविरुद्धम्, यच्च विषापेक्षया शीतं क्रियते तदामविरुद्धम् ॥ *C.Vi. 2/12 (Cakrapāṇī)*

Treatment becomes antagonist because if hot substances employed for the management of *āma* condition, then *āma viṣa* excacerbates, if cold substances given, which enhances *āma* condition. Due to contradiction in the lines of treatment of both the condition, prognosis becomes difficult or incurable.

आम उत्पत्ति हेतु (Āma Utpatti Hetu)

न च खलु केवल मात्रमेवहार राशिमामप्रदोष करमच्छन्ति, अपि तु खलु गुरु रुक्ष शीत शुष्क द्विष्ट विष्टम्भि विदाह्यशुचि विरुद्धानाम् काले चान्नपानानां उपसेवनं, काम क्रोध लोभ मोहेर्ष्याह्रीशोकमानोद्वेग भयोपतत्प मानसा वा यदन्नपान उपयुज्यते, तदन्याममेव प्रदूषयति । *C.Vi. 2/8*

1. न च खलु केवल मात्रमेवहार राशिमामप्रदोष करमच्छन्ति - Consumption of food substances in excess, along with not following the rules and regulation of dietetic described under *aṣṭavidha āhāra viśeṣāyatana* leads to formation of *āma*.
2. In take of food which are having the following qualities
   - गुरु - Heavy
   - रुक्ष - Ununctuous
   - शीत - Cold
   - शुष्क - Dry
   - द्विष्ट - Despicable
   - विष्टम्भि - Constipative
   - विदाही - Irritant
   - अशुचि - Unclean
3. विरुद्धानाम् काले चान्नपानानां उपसेवनं - In take of food in improper time.
4. In take of food if person afflicted with following mental morbidity
   - काम - Excessive passion for sexual pleasure
   - क्रोध - Anger
   - लोभ - Greed
   - मोह - Confusion
   - इर्ष्या - Bashfullness
   - शोक - Grief
   - मनोद्वेग - Indigestion
   - भयोपतप्त - Anxiety and fear
   - मानसा वा यदन्नपान उपयुज्यते - Eating food when person afflicted with

Caraka said that intake of wholesome food in proper quantity do not get properly digested when the individual is afflicted with grief, fear, anger, sorrows, excessive sleep and excessive vigil.

Doṣa prakapa etiological factors also play an important role in the manifestation of *āma*.

आम लक्षण (Biophysical Properties of Āma)

आम लक्षणं चैव पठन्ति द्रवं गुर्वनेकं वर्ण हेतुः सर्वरोगाणां स्निग्धं पिच्छिल मामं तन्तुमदनुबद्धशूलं दुर्गन्धि इत्यादि ।

A.H.Su 13/26 (Sarvāṅgasundara)

1. द्रवं - Liquid
2. गुरु - Heavy (high molecular weight)
3. अनेकं वर्ण - Attain different colours
4. हेतुः सर्वरोगाणां - Etiological factor for almost all diseases
5. स्निग्धं - Slimy
6. पिच्छिल - viscid
7. तन्तु - Thready
8. बद्ध - Sticky nature
9. शूलं - Various kinds of pain
10. दुर्गन्धि - Yields foul smell

Other qualities like increased sourness, excess in quantity, thick, increased turbidity, obstruct various pathways etc.

Production of Āma at various levels

It manifests due to

1. *Jaṭharāgni Mārdavatā*– Sluggish impaired functions of *Jaṭharāgni*.
2. *Dhātvāgni Daurbalya*– Altered functions of *dhātvāgni*.
3. *Bhūtāgni Māndyata*– Defect in the functions of *bhūtāgni*.

Biomorphic Pathogenic Structure of Āma and their Classification

When *āma* mixes with *doṣa, dhātu, Mala (dhātu Mala* and *śarira Mala)* develops certain complex adverse reactions, which is the basis for the manifestation of diseases. *āma* and *sāma* are the main two classification.

Sāma and *nirāma* state of *doṣa, dhātu* and *Mala* may be classified in a following manner are as follows

Sāma doṣa-3	*Nirāma doṣa-3*
Sāma vāta	*Nirāma vāta*
Sāma pitta	*Nirāma pitta*
Sāma kapha	*Nirāma kapha*
• *Sāma Dhātu– 7*	*Nirāma Dhātu– 7*
Sāma rasa	*Nirāma rasa*
Sāma rakta	*Nirāma rakta*
Sāma māmsa	*Nirāma māmsa*
Sāma meda	*Nirāma meda*
Sāma asthi	*Nirāma asthi*
Sāma majjā	*Nirāma majjā*
Sāma śukra.	*Nirāma śukra.*
• *Sāma sarira Mala– 02*	*Nirāma sarira Mala– 02*
Sāma puriṣa	*Sāma puriṣa*
Sāma mūtra	*Sāma mūtra*
• *Sāma dhātu Mala– 07*	*Nirāma dhātu Mala– 07*
Sāma rasadhātu	*Nirāma rasadhātu*
Malarupi kapha	*Malarupi kapha*
Sāma raktadhātu	*Nirāma raktadhātu*
Malarupi pitta	*Malarupi pitta*
Sāma māmsadhātu	*Nirāma māmsadhātu*
Malarupi kha-Mala	*Malarupi kha-Mala*
Sāma medadhātu	*Nirāma medadhātu*
Malarupi sveda	*Malarupi sveda*
Sāma asthidhātu	*Nirāma asthidhātu*
Malarupi keśa, loma & nakha	*Malarupi keśa, loma & nakha*
Sāma majjādhātu	*Nirāma majjādhātu*
Malarupi snehāmsa in aksi, viṭ tvacā	*Malarupi snehāmsa in aksi, viṭ tvacā*
Sāma śukradhātu	*Nirāma śukradhātu*
Malarupi ojas	*Malarupi ojas*

आम पूर्वरूप (Prodromal features of Āma)

स्तैमित्यमरुचिर्निद्रागात्रपाण्डुकताऽरतिः ।
रमणाशनशय्यादीन् धात्रिं च द्वेष्टि नित्यशः ।
अस्नातः स्नातरूपश्च स्नातश्चश्नात दर्शनः ।
आमस्येतानि रुपाणि विद्याद्वैद्य भविष्यतः ।
K.Su. 25/32-33

Prodromal symptoms of *āma* are stiffness, anorexia, excessive sleep, excessive pallor, dullness, continuous aversion from play, food, sleep; wet nurse, has appearance of bathed when unbathed and vice versa.

साम का सामान्य लक्षण (General symptoms of Āma)

स्त्रोतोरोधबलभ्रंश गौरवानिल मूढताः ।
आलस्यापक्ति निष्ठीव मलसङ्ग-रुचिक्लमाः ।
लिङ्गं सामानां...। *A.H.Su. 13/23-24*

1. स्त्रोतोरोध - Obstruction in *Srotas*
2. बलभ्रंश - Diminution of strength
3. गौरव - Heaviness
4. अनिल मूढताः - Disturbance in the normal movements of *vāta*
5. आलस्य - Drowsiness
6. अपक्ति - Indigestion
7. निष्ठीव - Excessive spitting of saliva/putam
8. मलसङ्ग - Obstruction for urine and stool
9. अरुचि - Lack of desire towards food
10. क्लम - Exhaustion.

Difference between Āma and Sāma

Āma	Sāma
1. It is formed due to improper digestion of food by deranged *agni*	1. Amalgamation of *Doṣa* & *Duṣya* with *Āma* is known as *Sāma*.
2. It leads to certain symptoms in the body like heaviness, attains different colours, slimy, viscid, sticky nature, manifest many types of pain, thready, yield	2. It causes obstruction in srotas, decreased body strength, heaviness, disturbances in normal movement of vata, lazyness indigestion, expectoration of sputum, constipation,

foul smell, sourness led, excess in quantity, increased turbidity, attains various dominated taste in the out come of the food increased liquidity	lack of desired towards food, excessive exhaustion
3. It leads to advance condition known as *Āmaviṣa*	3. In later stage, it gives rise to origin of certain diseases
4. Mainly two type of *Āmapradoṣa* manifests namely- *Alasaka & Visūcikā*	4. On the basis of *Doṣa & Duṣya* Amalgamation it manifest various diseases at different srotas
5. Its treatment includes fasting *(laṅghana)* intake of warm diet and drinks, carminative and appetisers	5. Its treatment depends upon the manifested disease

Validated Questionnaire for assessment of Āma developed by Dr. P.S. Byadgi and Dr.Neera saini

Cronbach's alpha reliability of the selected questions after item analysis (*Āma*)

S. No.	Items	Cronbach's alpha
1.	Do you feel any kind of obstruction in swallowing of food or obstruction in passing of waste products	.617
2.	Are you feeling excessive weakness	.592
3.	Are you feeling heaviness in body	.613
4.	Do you feel that there is obstruction in passage of flatus	.652
5.	Are you feeling excessive lethargy	.597
6.	Are you suffering from indigestion	.580
7.	Are you spitting sputum/ do you feel something struck in the throat	.622
8.	Is your bowel constipated	.609
9.	Do you feel lack of desire towards food	.600
10.	Do you feel exhausted even without doing any work	.582

The maximum number of points possible is 10. A classification of definitive *r̄ma* requires a score of 6/10.

CHAPTER 10

Assessment of Ama

Prof. Parameswarappa S. Byadgi and Dr. Ramanand Tiwari

साम एवं निराम दोष लक्षण (Sāma Evam Niram Doṣa, Duṣaya Lakṣaṇa)

सामवात लक्षण (Sāma Vāta Lakṣaṇa)

वायुः सामो विबन्धाग्निसाद स्तम्भान्त्र कूजनैः।
वेदनाशोफनिस्तोदैः क्रमशोऽङ्गानि पीडयन्।
विचरेद्युगपच्चापि गृह्णाति कुपितो भृशम्।
स्नेहाद्यै वृद्धिमायाति सूर्यमोघोदये निशि।

A.H.Su. 13/27-28 (Prakṣipta)

The following are the characteristics signs & symptoms of *sāma vāta*

1. विबन्ध - Obstruction for *Mala* and *mūtra*
2. अग्निसाद - Diminished functions of *Agni*
3. स्तम्भ - Stiffness
4. आन्त्र कूजनैः - Increased bowel sounds
5. वेदना - Pain all over the body
6. शोफ - Swelling
7. निस्तोदैः - Piercing/pricking/stinging types of pain
8. क्रमशोऽङ्गानि पीडयन् - Gradually manifest *Malaize* all over the body.
9. विचरेद्युगपच्चापि गृह्णाति कुपितो भृशम् - The agitated *vāyu* circulates all over the body and produces diseases when favourable situation arises.
10. स्नेहाद्यै वृद्धिमायाति सूर्यमोघोदये निशि - Anointing body both externally and internally, sunrise, cloudy season and night, aggravates *āma* condition.

सर्वं च मारुतं सामं तन्द्रास्तैमित्य गौरवैः।
स्निग्धत्वारोचकालस्य शैत्यशोफाग्निहानिभिः।
कटुरुक्षाभिलाषेण तद्विधोपशयेन च।
युक्तं विद्यान्निरामं तु तन्द्रादीनां विपर्ययात।

A.Hr.Ni. 16/29-30

When *vāta amalgamate* with *āma* produces the following characteristics signs & symptoms :

1. तन्द्रा - Fatigue
2. स्तैमित्य - Inactiveness
3. गौरवैः - Feeling of heaviness
4. स्निग्धता - Unctuousness
5. अरोचक - Anorexia
6. आलस्य - Lassitude
7. शैत्य - Feeling of coldness
8. शोफ - Swelling
9. अग्निहानिभिः - Loss of power of *Agni*
10. कटुरुक्षाभिलाषेण तद्विधोपशयेन च - Desire to take pungent and dry things and gets relieved by such factors.

निरामवात लक्षण (Nirāma Vāta Lakṣaṇa)

निरामो विषदो रुक्षो निर्विबन्धोऽल्प वेदनः।
विपरीत गुणैः शान्तिं स्निग्धैर्याति विशेषतः।

A.H.Su. 13/27-28 (Prakṣipta)

The following are the characteristics signs & symptoms of *nirāma vāta*

1. विषद - Clear/transparent
2. रुक्ष - Unuunctous
3. निर्विबन्ध - Free from obstruction to normal movements of *vāta*
4. अल्प वेदना - Mild pain
5. विपरीत गुणैः शान्तिं स्निग्धैर्याति विशेषतः - Subsides by *vāta* alleviating therapies like oleation.

सामपित्त लक्षण (Sāma Pitta Lakṣaṇa)

दुर्गान्धि हरितं श्यावं पित्तमम्लं घनं गुरु।
आम्लिका कण्ठ हृद्दाहकरं सामापित्तम् विनिर्दिशेत्।

A.H.Su. 13/27-28 (Prakṣipta)

The following are the characteristics signs & symptoms of *sāma pitta*

1. दुर्गान्धि - Foul smell
2. हरितं - Greenish disclouration
3. श्यावं - Light blackish
4. पित्तमम्लं - Sour taste

5. घनं - Doesn't spread in water (Thick)
6. गुरु - heavy
7. आम्लिका - Sour eructations
8. कण्ठ दाह - Burning sensation in throat
9. हृदय दाह - Burning sensation in cardiac region

निराम पित्त लक्षण (Nirāma Pitta Lakṣaṇa)

आताम्रपीतमत्युष्णं रसे कटुकमस्थिरं।
पक्वं विगान्धि विज्ञेय रुचि पक्ति बलप्रदयम्।
A.H.Su. 13/27-28 (Prakṣipta)

The following are the characteristics signs & symptoms of *nirāma pitta :*

1. आताम्रवर्ण - Slight coppery
2. पीतवर्ण - Yellowish colour
3. अत्युष्णं - Markedly increased warmthness
4. रसे कटुकम - Pungent taste
5. अस्थिरं - Which spreads and mixes with water easily
6. विगन्धि - Doesn't yield bad smell
8. रुचि - Enhances taste
9. पक्ति बलप्रदयम् - Enhances the strength of biodigestive fire.

साम कफ लक्षण (Sāma Kapha Lakṣaṇa)

आविलस्तन्तुलः स्त्यानः कण्ठ देशेऽवतिष्ठते।
सामो बलासो दुर्गान्धिः क्षुदुद्गार विघातकृत।
A.H.Su. 13/27-28 (Prakṣipta)

The following are the characteristics signs & symptoms of *sāma kapha :*

1. आविल - Increased turbidity in stool, urine and other waste substances of the body
2. स्तन्तुलः - Thready
3. स्त्यानः कण्ठ देशेऽवतिष्ठते - Thick, stagnates in the throat
4. दुर्गान्धिः - Foul smell
5. क्षुद् विघातकृत - Complete lack of appetite
5. उद्गार विघातकृत - Complete obstruction for eructations.

निराम कफ लक्षण (Nirāma Kapha Lakṣaṇā)

फेनवान् पिण्डितः पाण्डुनिःसारोऽगन्ध एव च।
पक्वः स एव विज्ञेयश्छेदवान् वक्त्रशुद्धिदः।
A.H.Su. 13/27-28 (Prakṣipta)

The following are the characteristics signs & symptoms of *Nirāma kapha :*

1. फेनवान् - Froathy
   पिण्डितः - Free from threads
   पाण्डु - Pallor
   निःसार - Clear light substance
   अगन्ध - Free from foul smell
   पक्वः विज्ञेयश्छेदवान् - Which is properly digested
   वक्त्रशुद्धिदः - Cleanses oral cavity

निराम का साधारण लक्षण (Nirāma Laksaṇās in general)

.........निरामाणां विपर्ययः। *A.H.Su. 13/23-24*

Symptoms opposite to *āma* are the *nirāma lakṣaṇās* like no obstruction in channels, regaining strength, lightness, *vāta* moves freely in its own path, active, proper digestion, no excessive secretions from oral cavity, no obstruction for urine, stool, flatus; desire to take food, free from exhaustion.

साम रसधातु लक्षण (Sāma Rasadhātu Lakṣaṇa)

अश्रद्धा च अरुचिश्चास्यवैरस्यमरतिमरसंज्ञता।
हल्लासो गौरवं तन्द्रा सांगमर्दो ज्वरस्तमः।
पाण्डुत्वं स्त्रोतसां रोधः क्लैब्यं सादः कृशाङ्गता।
नाशोऽग्नेरयथाकालं वलयः पलितानि च।
रसप्रदोषज रोगाः। *C.Su. 28/9-10*

तत्र, अन्नाश्रद्धारोचकाविपाकाङ्गमर्दज्वरहृल्लासतृप्तिगौरव-हृत्पाण्डुरोगमार्गोपरोधकार्श्यवैरस्याङ्गसादाकालवलिपलित-दर्शनप्रभृतयो रसदोषजा विकाराः॥ *S.Su. 24/10*

The following are the characteristics signs & symptoms of *sāma rasadhātu :*

1. अश्रद्धा (Disinclination for food)-Lack of interest or desire toward food.
2. अरुचि (Anorexia)- Person don't feel to swallow the food.
3. आस्यवैरस्य (Foul taste in mouth) - Feeling loss of taste in mouth.
4. अरसंज्ञता (Lack of taste sensing capacity) - Doesn't feel any taste in mouth.
5. हल्लासो - Nausea.
6. गौरवं - Heaviness.

7. तन्द्रा - Drowsiness, fatigue.
8. अंगमर्द - Malaise, bodyache.
9. ज्वर - Fever
10. तमः - Darkness in front of eyes.
11. पाण्डुत्वं - Anaemia-pale discolouration of skin.
12. स्रोतसां रोधः/मार्गोपरोध - Obstruction of body channels·
13. क्लैब्यं - Impotency.
14. सादः - Heaviness of body.
15. कृशाङ्गता/कार्श्य - Emaciation.
16. नाशोऽग्ने - Loss of digestion strength.
17. अयथाकालं वलयः पलिता/अकाल वलि पलित दर्शन - Premature winkling of skin and greying of hairs
18. अविपाक - In digestion
19. तृप्ति - Contentment
20. हृद्रोग - Disease of hart

साम रक्तधातु लक्षण (Sāma Raktadhātu Lakṣaṇa)

वक्ष्यन्ते रक्तदोषजाः । कुष्ठ विसर्प पिडका रक्तपित्तमसृग्दरः गुदमेढ्रास्यपाकश्च प्लीहा गुल्मोऽथ विद्रधिः । नीलिका कामला व्यंग विप्लवस्तिलकालकाः । दद्रुश्चर्मदलम् श्वित्रम पामा कोठास्त्र मण्डलम् । रक्तप्रदोषाज्ञयन्ते । *C.Su. 28/11-12*

कुष्ठविसर्पपिडकामशकनीलिकातिलकालकन्यच्छव्यङ्गेन्द्रलुप्त-प्लीहविद्रधिगुल्मवातशोणितार्शोऽर्बुदाङ्गमर्दासृग्दाररक्तपित्तप्रभृतयो रक्तदोषजा गुदमुखमेढ्रपाकाश्च ॥ *S.Su. 24/11*

The following are the characteristics signs & symptoms of *sāma raktadhātu :*

1. कुष्ठ - Skin diseases.
2. विसर्प - Acute spreading diseases of the skin.
3. पिडका - Carbuncle.
4. रक्तपित्त - Bleeding diseases.
5. असृग्दरः - Menorrhagia.
6. गुदमेढ्रपाक (inflammation and suppuration in rectum and penis).
7. आस्यपाक/मुखपाक (mouth ulcers).
8. प्लीहा (disease of the spleen).
9. गुल्म (tumours in abdomen).
10. विद्रधिः (Abscess).
11. नीलिका (blue moles).
12. कामला (Jaundice).
13. व्यंग - Blackish discolouration on face).
14. विप्लव (port wine mark).
15. तिलकालकाः (black mole)- shape of sesames.
16. दद्रु (ringworm)- specifically Dadru is seen in Rakta Pradoshaja Vikara thus mentioned separately.
17. चर्मदलम् (dermatitis).
18. श्वित्र (leucoderma)
19. पामा - Papules).
20. कोठ - Urticaria
21. अस्त्र मण्डल (Lohita Mandala) - Red circular patches
22. मशक - Skin Disease
23. न्यच्छ - Moles
24. इन्द्रलुप्त - Alopecia
25. वातरक्त - Gout
26. अर्श - Gout
27. अंगमर्द - General malaize

साम मांसधातु लक्षण (Sāma Māṁsadhātu Lakṣaṇa)

श्रृणु मांस प्रदोषजान् । अधिमांसार्बुदं कीलं गलशालूक शुण्डिके । पूतिमांसालजी गण्डगण्डमालोपजिह्विकाः । विद्यान् मांसाश्रयान् । *C.Su. 28/13-14*

अधिमांसार्बुदार्शोऽधिजिह्वोपजिह्वोपकुशगलशुण्डिकाऽलजीमांससङ्घातौष्ठप्रकोपगलगण्डगण्डमालाप्रभृतयो मांसदोषजाः ॥ *S.Su. 24/12*

The following are the characteristics signs & symptoms of *sāma māṁsadhātu :*

1. अधिमांस - Hypertropy of the muscles/Granuloma
2. मांसार्बुद - Myoma
3. कील - Piles
4. गलशालूक - Uvulitis
5. गलशुण्डिक - Tonsillitis
6. पूतिमांस - Sloughing of flesh
7. अलजी - Boils

8. गण्ड - Goitre
9. गण्डमाल - Cervical adenitis
10. उपजिह्विकाः - Inflammation of epiglottis
11. अधिजिह्वा - Hypertropy of the tongue
12. उपकुश - Gum boil
13. मांससङ्घात - Hardaning of the muscles
14. ओष्ठप्रकोप - Inflammation of the lips

साम मेद धातु लक्षण (Sāma Medadhātu Lakṣaṇa)

मेदःसंश्रयांस्तु प्रचक्ष्महे। निन्दितानि प्रमेहाणां पूर्वरूपाणि यानि च। *C.Su. 28/15*

ग्रन्थिवृद्धिगलगण्डार्बुदमेदोजौष्ठप्रकोपमधुमेहातिस्थौल्यातिस्वेदप्रभृतयो मेदोदोषजाः ॥ *S.Su. 24/13*

The following are the characteristics signs & symptoms of *sāma medadhātu :*

1. अष्टनिन्दित पुरुष - *Aṣṭanindit Puruṣa* i.e. too tall, too short, over hairy, hairless, too black, over fair, over obese, over emaciation) are the symptoms of *sāma meda.*
2. प्रमेहपूर्वरूप - Premonitory signs and symptoms of *prameha*
3. ग्रन्थि - Benign and malignant tumours, internal growths
4. वृद्धि - Enlargement of scroatum
5. गलगण्ड - Goiter
6. अर्बुद - Tumour/Cancer
7. मेदोजोष्ठप्रकोप - Accumulation of *meda* in lips
8. मधुमेह - Diabetes mellitus
9. अतिस्थौल्य - Obesity
10. अतिस्वेद - Excessive perspiration

साम अस्थिधातु लक्षण (Sāma Aśthidhātu Lakṣaṇa)

अध्यस्थि दन्तौ दन्तास्थिभेदशूलम् विवर्णता।
केशलोमनखाश्मश्रुदोषाश्चास्थिप्रदोषजाः ।
C.Su. 28/16

अध्यस्थ्यधिदन्तास्थितोदशूलकुनखप्रभृतयोऽस्थिदोषजाः ॥
S.Su. 24/14

The following are the characteristics signs & symptoms of *sāma aśthidhātu :*

1. अध्यस्थि - Hypertrophy of the bones.
2. अधिदन्त - Excess teeth.
3. दन्तभेद शूल - Crackling sensation and pain in teeth.
4. अस्थिभेद शूल - Crackling sensation and pain in bone.
5. विवर्णता - Discoloration of hair.
6. केशलोमनखाश्मश्रुदोष - Deformity of hair of head, body hairs, nail and beard.
7. कुनख - Diseases in nails/Paronychia

साम मज्जाधातु लक्षण (Sāma Majjādhātu Lakṣaṇa)

रूक् पर्वणां भ्रमो मूर्च्छा दर्शनं तमसस्तथा।
अरुषां स्थूलमूलानां पर्वजानां च दर्शनं।
C.Su. 28/17-18

तमोदर्शनमूर्च्छाभ्रमपर्वस्थूलमूलारुर्जन्मनेत्राभिस्यन्दप्रभृतयो मज्जदोषजाः ॥ *S.Su. 24/15*

The following are the characteristics signs & symptoms of *sāma majjādhātu :*

1. रूक् पर्वणां - Pain in small joints.
2. भ्रम - Giddiness.
3. मूर्च्छा - Fainting. loss of consciousness.
4. दर्शनं तमसस्तथा - Seeing darkness in front of eyes.
5. अरुषां स्थूलमूलानां पर्वजानां च दर्शन - Manifestation of deep-seated abscesses in joints
6. नेत्राभिस्यन्द - Inflammation in eyes

साम शुक्रधातु लक्षण (Sāma Śukradhātu Lakṣaṇa)

शुक्रस्य दोषात् क्लैब्यमहर्षणं।
रोगी वा क्लीबमल्पायु विरुपं वा प्रजायते।
न चास्य जायते गर्भः पतति प्रस्त्रवत्यपि।
शुक्रं हि दुष्टं सापत्यं सदारं बाधते नरं।
C.Su. 28/18-19

क्लैब्याप्रहर्षशुक्राश्मरीशुक्रदोषादयश्च तद्दोषजाः ॥
S.Su. 24/16

The following are the characteristics signs & symptoms of *sāma śukradhātu :*

1. क्लैब्य - Non erection of penis)
2. अहर्षणं - Incapability to indulge in sex inspite of erection too

3. रोगी वा क्लीबमल्पायु विरुपं वा प्रजायते - Diseased progeny having short lifespan or deformed/ disfigured
4. न चास्य जायते गर्भः पतति प्रस्रवत्यपि - No conception or if conception there will be abortion or miscarriage
5. सापत्यं सदारं बाधते नरं - Manifests infertility and brings misery to his entire family

साम मूत्र लक्षण (Sāma Mūtra Lakṣaṇās)

The following characteristic properties indicates *sāma* condition of *mūtra* are as follows :

1. प्रभूतमूत्रता - Excessive urination
2. मूत्र में अनेक वर्णता - Urine attain different colours
3. स्निग्ध मूत्रता - Slimy urine
4. पिच्छिल मूत्रता - Viscid urine
5. तन्तु मूत्रता - Thready urine
6. बद्ध मूत्रता - Strained urination
7. शूलयुक्त मूत्रप्रवृत्ति - Various kinds of pain while passing urine
8. मूत्र दुर्गन्धि - Foul smell urine
9. मुर्हुमुहु मूत्रप्रवृत्ति - Increased frequency of urine
10. आविल मूत्रता - Increased turbidity.
11. If drop of tila-taila floats over urine surface but not spreads indicates disease become difficult to cure.
12. If tila-taila drop sinks in urine indicates incurability of the diseases.
13. When it mixes with *doṣas, dhātus* and other *malās* leading to manifestation of various urological disorders.
14. Change in specific gravity.
15. Develops discomfort in *mūtravaha srotoavayava.*

साम पुरीष लक्षण (Sāma Puriṣa Lakṣaṇa)

संसृष्टमेभिर्दोषैस्तुन्यस्तमप्स्ववसीदति ।
पुरीषं भृश दुर्गन्धिं विच्छिन्न चामसंज्ञकम् ।
S.S.Utt. 40/17

The following characteristic properties indicates *sāma* condition of *puriṣa* are as follows :

1. प्रभूतपुरीषप्रवृत्ति - Excessive stool evacuation
2. पुरीष में अनेक वर्णता - Stool attain different colours
3. स्निग्ध पुरीषता - Slimy stool
4. पिच्छिल पुरीषता - Viscid stool
5. तन्तु पुरीषता - Thready stool
6. बद्ध पुरीषता - Constipation
7. शूलयुक्त पुरीषप्रवृत्ति - Various kinds of pain while passing stool
8. पुरीष दुर्गन्धि - Foul smell stool
9. मुर्हुमुहु पुरीषप्रवृत्ति - Increased frequency of stool
10. द्रव पुरीष - Watery stool
11. सशब्द पुरीषप्रवृत्ति - Various kinds of sounds while passing stool
12. फेनिल पुरीषप्रवृत्ति - Frothy stool
13. संसृष्टमेभिर्दोषै- When it combines with *doṣās, dhātus* and other *malās* manifests diseases accordingly.
14. स्तुन्यस्तमप्स्ववसीदति - Sinks in water.
15. ग्रथित पुरीष - Little quantity comes out oftenly with difficulty with sound.
16. विच्छिन्न पुरीष - Splitted stool

साम स्वेद लक्षण (Sāma Sveda Lakṣaṇa)

The following characteristic properties indicates *sāma* condition of *sāma sveda* are as follows :

1. प्रभूतस्वेदप्रवृत्ति - Excessive sweat formation
2. स्वेद में अनेक वर्णता - Sweat attain different colours
3. स्निग्ध स्वेद - Slimy sweat
4. बद्ध स्वेद - Obstruction for sweat
5. स्वेद दुर्गन्धि - Foul smell sweat
6. मुर्हुमुहु स्वेदप्रवृत्ति - Increased frequency of sweat
7. संसृष्टमेभिर्दोषै- When it combines with *doṣās, dhātus* and other *malās* manifests diseases accordingly.
8. कण्डू- Itching.
9. त्वचा दाह- Burning sensation in skin

10. त्वचा रुक्षता- Roughness of skin.
11. स्वेद अप्रवृत्ति- Absence of sweat formation
11. Manifests derangement in the functions of *svedavaha Srotas*.

निराम मूत्र लक्षण (Nirāma Mūtra Lakṣaṇa)

प्रमेहिणो यदा मूत्रमपिच्छिलमनाविलम् ।
विशदं तिक्तकटुकं तदाऽऽरोग्यं प्रचक्षते ॥

S.S.Ci. 12/20

The following characteristic properties indicates *sāma* condition of *nirāma mūtra* are as follows :

1. अपिच्छिल - Free from froath
2. अनाविलाम - Transparent
3. विशदं - Clear
4. तिक्तकटुकं - Bitter & pungent taste in urine
5. Opposite qualities of *sāma mūtratā*

निराम पुरीष लक्षण (Nirāma Puriṣa Lakṣaṇa)

एतान्येव तु लिङ्गानि विपरीतानि यस्य तु ।
लाघवं च मनुष्यस्य तस्य पक्वं विनिर्दिशेत् ॥

S.S.Utt. 40/18

The following characteristic properties indicates *sāma* condition of *nirāma puriṣa* are as follows :

1. Opposite qualities of *Sāma puriṣa*
2. No *Amalgamation* with *doṣās, dhātus* and with other *malās*.
3. Normal quantity with normal frequency.
4. Attains normal colour and frequency.
5. *Puriṣa* comes out without difficulty.
6. Feeling of lightness.

निराम स्वेद लक्षण (Nirāma Sveda Lakṣaṇa)

1. Normal perspiration.
2. No roughness.
3. No burning sensation.
4. No itching.
5. Free from foul smell from the body.
6. Opposite qualities of *Sāma sveda*

साम रसधातुमलरूपि कफ लक्षण (Qualities of rasa Dhātu Malarupi kapha) C.Ci 18th Chapter

When *rasa dhātu Malarupi kapha* combines with *āma* produces following symptoms.

1. शुष्क कफ – Dry cough
2. स कफ– Cough with sputum
3. श्लेष्माणं पित्त संसृष्ठं– Expectorates sputum mixed with pitta
4. बहुलं मधुरं स्निग्धं निष्ठीवति घनं कफम् ।
   Large amount of thick sputum comes out which is sweet in taste and unct-uous.
5. दुर्गन्धं हरितं रक्तं ष्ठीवेत् पूयोपमं कफम् ।
   Sputum comes out mixed with pus, which yields foul smell, colour is green or red in colour.
6. पिच्छिलं बहलं विस्त्रं हरितं श्वेतपीतकम् ।
   कासमानो रसं यक्ष्मी निष्ठीवति कफानुगम् ।
   C.Ci. 8/51

   Patient of *rājayakṣmā* spits out sputum which is slimy, large in quantity, viscus, putrid smell, green, white or yellow in colour.
7. सान्द्र कफ– Thick sputum *S.U. 52/10*

साम रक्तधातु मलरूपि पित्त लक्षण (Qualities of rakta Dhātu Malarupi pitta)

1. पाण्डु हारिद्र हरितान् वर्णान बहुविधांस्त्वचि स पाण्डुरोग । *C.Ci. 16/11*
   Colour of the skin changed to various colours like pallor, deep yellow, greenish discolouration.
2. कृष्णपाण्डुत्वं त्वचा रुक्षारुणाङ्गताम् ।
   C.Ci. 16th Chapter

   Colour of the skin changed to blackish pale and afflicted area becomes rough and red.
3. हारिद्र नेत्रः स भृशं हारिद्रत्वङ्नखाननः ।
   रक्तपीतशकृन्मूत्रो भेकवर्णो........ ।
   C.Ci. 17/34-35

   Colour changed to yellow in eyes and becomes deep yellowish discolouration in skin, nails, face; urine and stool colour changed to red and yellow and person looks like a frog.

Difference between Āma Rasa and Āma Viṣa

Āma Rasa	*Āma Viṣa*
1. Manifest due to weakness in *Agni*	1. Manifest after the formation of *āma,* if person adopts improper dietetic and behaviour pattern.
2. It manifest is *āmāśaya.*	2. It manifests in *āmaśaya* and spreads to all over body quickly like poison
3. Responds to principle treatment of *āma*	3. Doesn't respond to principle treatment of *āma* due to antagonicity in the lines of treatment of *āma* with *āmaviṣa* i.e. hot therapies con ducive to *āma* but aggravates *āma viṣa* and cold therapies conducive to *āma viṣa* but aggravates *āma*.
4. Gradual manifestation	4. Acute in onset
5. Diseases become curable, incurable or curable with difficulty	5. Disease becomes incurable
6. Involvement of *doṣās, duṣyas* and *Srotas* either singly or in combination and accordingly it manifest diseases.	6. Involvement of all the *doṣās, dhātus, malās* along with involving two or more *Srotas.*
7. Pathogenesis may be superficial or deep seated.	7. Always deep seated
8. Morbid *kapha doṣa lakṣaṇās* mimic with *āma,* that's why it mainly targets *kapha sthānās* and later spreads to all the sites.	8. It targets all the tissues.
9. Condition may not be fatal	9. Condition may become fatal and it may kill the individual.
10. It can be managed successfully	10. Don't treat other wise you will loose name and fame.

Critical evaluation of Āma

The main factor for the formation of *āma* is deranged functions of *Agnis*. *Āma* develops inside the *āmaśaya*. If it remains for longer duration in *āmāśaya* in due course of time it attains *suktatva*, which is termed as *āma pradoṣa* or *āma viṣa*. The hazardous effects of *āma* depends on the attainment of the degree of *suktābhāva,* which decides the prognosis of diseases. *Cakrapāṇi* clarified *suktābhāva* as *āmlatva.*

1. The dietetic indiscretions and emotional stress may impair the effective functioning of the neurohumoral mechanisms as a result *āma* develops inside the body.
2. There are two main factors supposed to play an important role in attaining *śuktāpāka* are– (i) The hyposecretion of digestive juices and (ii) Diminished or sluggish gastro intestinal motility.
3. Fermentation may relate to the starch or carbohydrate inside the body, which may develop foul odour and extreme pastiness with increased mucous.
4. The term *Mala sancaya* may be used to designate *āma* and *sāma*. The word *Mala* has two implications i.e. egest and the by product of metabolism i.e. metabolic waste products i.e. *malās* not properly eliminated or utilized by the body.
5. *Āma, āmadoṣa* and *āmaviṣa* plays an vital role in the pathogenesis as well as prognosis of diseases.

6. Certain chemical compounds in the body does damage which accumulates to produce ageing are called free radicals. This may be considered as *āma*.
7. Abnormal increase in the normal values of blood, urine, stool, semen, sputum, cerebrospinal fluid, salivary juice. etc may be understood as *āma* condition.
8. If *āma* manifests in excess body tries to eliminate either through upper channels or through lower channels or with both by manifesting acute condition.
9. Direct influence of *āma* observed in *āmavāta, vāta* rakta, *grahaṇi doṣa, kāsa, rājayakṣma, pāṇḍu, kāmala, kuṣṭha* etc.

CHAPTER

11

Sthanasamshraya and Poorvaroopa

Prof. Parameswarappa S. Byadgi and Dr. Arunima P.S.

स्थानसंश्रय (Sthānasaṁśraya)

प्रसृतानां पुनर्दोषाणां स्रोतोवैगुण्याद्यत्र सङ्गः स स्थानसंश्रयः ।

S.Su 21/33 (Dalhaṇa)

Agitated *doṣa* spreads to different places and struck somewhere because of obstruction in *srotas* due to abnormality in *srotas* is called *sthāna samśraya.*

अत ऊर्ध्वं स्थानसंश्रयं वक्ष्यामः । एवं प्रकुपितास्तांस्तान् शरीरप्रदेशानागम्य तांस्तान् व्याधीन् जनयन्ति । ते यदोदर सन्निवेशं कुर्वन्ति तदा गुल्मविद्रध्युदराग्निसङ्गानाह विसूचिकातिसार प्रभृतीञ्जनयन्ति; बस्तिगताः प्रमेहाश्मरीमूत्राघात मूत्रदोष प्रभृतीन्; मेढ्रगता निरुद्धप्रकशोपदंश शूकदोष प्रभृतीन्; गुदगता भगन्दरार्शः प्रभृतीन्; वृषणगता वृद्धीः; ऊर्ध्वजत्रुगतास्तुर्ध्वजान्; त्वङ्मांसशोणितस्थाः क्षुद्ररोगान् कुष्ठानि विसर्पांश्च; मेदोगता ग्रन्थ्यपच्यर्बुदगलगण्डालजी प्रभृतीन्; अस्थिगता विद्रध्यनुशयी प्रभृतीन्; पादगताः श्लीपदवातशोणित वातकण्टक प्रभृतीन्; सर्वाङ्गगता ज्वर सर्वाङ्गरोग प्रभृतीन्; तेषामेवामभि संनिविष्टानां पूर्वरुप प्रादुर्भावः; तं प्रतिरोगं वक्ष्यामः । तत्र पूर्वरुपगतेषु चतुर्थः क्रियाकालः ॥ *S.Su 21/33*

Agitated and disturbed *doṣa* moving all over the body and produces diseases when favourable environment was developed for *doṣa-duṣya sammūrchanā* due to unheathiness of *srotas* in a particular site resuting into manifestation of diseases.

Udara– Doṣa-duṣya sammūrchana in *udara* manifests following diseases—*gulma, vidradhi, udara roga, agni vikāra, vibandha, ānāha, visūcikā, atisāra, pravāhikā, vilambika* etc.

Bastigata– When there is a *doṣa-duṣya sammūrchana* in *basti* region produces following diseases—*prameha, aśmari, mūtrāghāta, mūtra doṣa* etc.

Meḍhṛagata– Doṣa-duṣya sammūrchanā in *meḍhra pradeśa* manifests following diseases—*Niruddhaprakaśa, upadaṁśa, śūka doṣa* etc.

Gudagata– Doṣa-duṣya sammūrchana in *guda* region manifests following diseases—*Bhagandara, arśa etc.*

Vṛṣaṇagata– Vṛddhi disease manifests.

Ūrdhvajatrugata– Manifest *ūrdhvajatru gata vikāra.*

Tvak, Māmsa and Śonitagata–

त्वक् शब्देनात्र रसो विवक्षितः । *(Dalhaṇa)*

Rasa is considered in place of *tvak* because any changes happening in *rasa* are expressed in skin. Diseases are—*kṣudraroga, kuṣṭha, visarpa* etc.

Medagata– Disease are—*Granthi, apaci, arbuda, galagaṇḍa, alaji* etc.

Asthigata– Diseases are—*Asthi vidradi.*

Pādagata– Disease are—*Ślīpada, vātaśonita, vātakanṭaka* etc.

Sarvāngagata– Diseases are—*Jvara, vātavyādhi, prameha, pāṇḍu roga, śoṣa* etc.

In this particular stage of *kriyākāla* premonitory signs and symptoms of the diseases are seen.

चतुर्थः क्रियाकाल इति चतुर्थाश्चिकित्सावसरः चिकित्सा चात्र दोषस्य दूष्यस्य चेत्युभयाश्रिता ।

S.Su 21/33 (Dalhaṇa)

It is the fourth stage of *kriyākāla* and treatment must be employed to correct *doṣa, duṣya* or both.

पूर्वरूप (Pūrvarūpa)

Synonyms : अग्रज, उत्पत्स्यति, पुरोगामि

पूर्वरूपं प्रागुत्पत्ति लक्षणं व्याधेः । *C.Ni 1/8*

Appearance of symptoms before the manifestation of actual disease is called *pūrvarupa.*

पूर्वजाः पूर्वरुपाख्या । *A.Hr.Su 12/60*

Symptoms manifest prior to manifestation of disease is *pūrvarupa.*

व्याधेरुत्पत्तेः पूर्वं यल्लक्षणं तत् पूर्वरूपं व्याधेः ।

C.Ni 1/8 (Gaṅgādhara)

Manifestation of symptoms before the actual manifestation of disease is called *pūrvarupa*.

एतेन उत्पत्तेः पूर्वं यद् भविष्यद्व्याधे लक्षणम् ।

C.Ni 1/8 (Cakrapāṇi)

It indicates the forthcoming disease is called *pūrvarupa*.

प्राग्रूपं येन लक्ष्यते । उत्पित्सुरामयो दोष विशेषेणानधिष्ठितः ।
लिङ्गमव्यक्तमल्पत्वाव्द्याधीनां तधथायथम् । A.H.Ni 1/3-4

Prāgrupa or *pūrvarupa* means which indicates the forth coming diseases but it is very difficult to identify the specific *doṣa, dūṣya* etc. because of their poor manifestation and mild nature and the same was described in respective chapters.

रोगो हि राजेव बहुपरिवारः । तस्य केचिदग्रे केचित्सह केचित्पश्चाद्व्रजन्ति । ते च पूर्वरूपरूपोपद्रवसज्ञाः ।

A.H.Ni 1/3-4 (Hemādri)

Disease is considered to be king because of their multiple dimensions. It can be divided into three sub headings namely symptoms appear before the manifestation of disease is called *pūrvarupa*. Actual manifestation of symptoms is called *rupa* and manifestations of symptoms after the development of disease is called *upadrava*.

पूर्वरूपं नाम येन भाविव्याधिविशेषो ज्ञायते न तु दोष विशेषस्त्वदुत्पत्स्यमानस्य व्याधेरल्पत्वादव्यक्तं रूपम् ।

A.S.Ni 1/8

Which indicates the forthcoming disease but it doesn't specify the pathogenic agents like *doṣa, dūṣya* etc. due to mild nature and poorly manifested features.

पूर्वरूप भेद (Classification of Pūrvarupa)

तच्च पूर्वरूपं द्विविधं-एकं भाविव्याध्यव्यक्तलिङ्गम् ।

C.Ni 1/8 (Cakrapāṇi)

Pūrvarupa is of 2 types

One which indicates the forth coming disease but some times symptoms may not be seen or if seen they are poorly manifested with less symptoms.

For example : *Vāta vyādhi, Uraḥkṣata*

द्वितीयन्तु–दोषदूष्यसम्मूर्च्छनाजन्य मव्यक्तलिङ्गादन्यदेव ।

C.Ni 1/8 (Cakrapāṇi)

Second variety of *pūrvarupa* manifest after *doṣa* and *dūṣya sammūrchanā* with prominent symptoms.

For example : *Jvara pūrvarupa*

आलस्यं नयने सास्त्रे जृम्भणं गौरवं क्लमः ।
......ज्वरलक्षणमग्रजम् । *C.Ci 3/28-29*

Laziness, Lacrimation, yawning, heaviness, mental fatigue, uncertainty about liking and disliking fire, sun, wind and water; indigestion, anorexia, depletion in strength and complexion and mild change in conduct are the premonitory signs and symptoms of *jvara*.

यत्र तु व्यक्तं भवति स चासाध्यो मतः ।

C.Ni 1/8 (Cakrapāṇi)

It also indicates incurability or death of the patients as described under prognosis of disease as well as under *ariṣṭa*.

द्विविधं पूर्वरूपं व्याचक्षते, सामान्य पूर्वरूपं विशिष्टपूर्वरुपञ्च ।

C.Ni 1/8 (Gaṅgādhara)

Pūrvarupa is of 2 types

1. *Sāmānya Pūrvarupa* (General symptoms)
2. *Viśiṣṭa pūrvarupa* (Specific symptoms)

1. सामान्य पूर्वरूप (Sāmānya Pūrvarupa (General symptoms)

Here general symptoms of disease manifest before the manifestation of disease but doesn't specify the involvement of *doṣa*.

श्रमोऽरति विवर्णत्वं वैरस्यं नयनप्लवः सामान्यतो ।

S.Vi 39/25-27

Fatigue, restlessness, abnormal complexion, abnormal taste, lacrimation, etc. are the general premonitory symptoms of *jvara*.

विशेष पूर्वरूप (Viśeṣa Pūrvarupa)

व्यक्तें हि ज्वरे वातादिजे जृम्भादयः पूर्वरूपापेक्षया अत्यर्थं भवान्त ॥ *C.Ni 1/8 (Cakrapāṇi)*

Appearance of premonitory symptoms observed specifically by specific *doṣās*.

विशेषात्तु जृम्भाऽत्यर्थं समीरणात् । पित्तान्नयनोर्दाहः कफान्नान्नभिनन्दनम् । *S.Utt 39/27*

Specific premonitory symptoms of–

- *Vātaja jvara* is excess yawning.
- *Pittaja jvara* burning sensation in eyes.
- *Kaphaja jvara* dislike for food.

अन्यलक्षणो नाम यो भविष्यद्व्याधि ख्यापकः; स पूर्वरूप सज्ञः । *S.Su 35/18*

Anyalakṣaṇa means which foretells the future disease and it is called *pūrvarupa*.

स्थानसंश्रयिणः क्रुद्धा भाविव्याधि प्रबोधकम् ।
दोषाः कुर्वन्ति यल्लिङ्गं पूर्वरूपं तदुच्यते ॥
M.Ni 1/5-6 (Madhukoṣa)

Sthānasaṁśraya stage of *kriyākāla* represents *pūrvarupa* by manifesting premonitory signs and symptoms of the disease.

तत्र पूर्वरूपगतेषु चतुर्थः क्रियाकालः ।

4th stage of *kriyākāla* manifest premonitory symptoms and signs.

सामान्य पूर्वरूप (Sāmānya Pūrvarupa)

तत्र सामान्यं येन दोषदूष्यसंम्मूर्च्छनावस्थाजनितेन भाविज्वरादि व्याधिमात्रं प्रतीयते, न तु वातादिजनितत्वादि विशेषः ।
M.Ni 1/5-6 (Madhukoṣa)

General *pūrvarupa* manifest after the conglomeration of *doṣā* with *dūṣyās* as a result it manifest *pūrvarupa* of *jvarādi vyādhis*. But it doesn't specify the *vātādi doṣās*.

व्याधेर्जातिर्बुभूत्सा च पूर्वरूपेण लक्ष्यते भावः किमात्मकत्वं च लक्ष्यते लक्ष्येन हि । *M.Ni 1/5-6 (Madhukoṣa)*

It specifies the forth coming disease as *jvara, ātisāra, kuṣṭha* etc. by manifesting premonitory symptoms of respective disease. Involvement of *doṣa* can be understood by *rupa*.

विशिष्टं यथा उरः क्षतादौ लिङ्गान्येव वातादिजन्यव्यक्तानि ।
M.Ni 1/5-6 (Madhukoṣa)

Specific *pūrvarupa* observed in *uraḥkṣata* and *vātavyādhi* but these are mild.

भावि व्याधि बोधकमेव लिङ्गम् पूर्वरूपम् ।
M.Ni 1/5-6 (Madhukoṣa)

Which indicates the forthcoming disease is called *pūrvarupa*.

ननु, यदा पूर्वरूपविशेष स्मृत्वोत्पन्न व्याधेर्विशेषावधारणं तदा पूर्वरूपमपि वर्तमान व्याधि बोधकं ।
M.Ni 1/5-6 (Madhukoṣa)

Specific characteristic features of *pūrvarupa* indicates the forthcoming disease signalling the name of the disease.

यथोक्तं रक्तपित्तप्रमेहरूप संदेहे चरकेण हारिद्रवर्णं रुधिरं च मूत्रं विना प्रमेहस्य हि पूर्वरूपैः । यो मूत्र येत्तं न वदेत् प्रमेहं रक्तस्य पित्तस्य हि स प्रकोपः । *C.Ci 6/54*

If the colour of the urine is either yellow or mixed with blood eliminated through the urine without the manifestation of premonitory symptoms and signs of *prameha*, such patient should not be diagnosed as *prameha rogi*, on the other hand it may be diagnosed as *raktapitta*.

ज्वरस्य पूर्वरुपेषु वर्तमानेषु बुद्धिमान ।
पाययेत् घृतं स्वच्छं यतः सलभते सुखम् ।
विधिर्मारुतजेष्वेष, पैत्तिकेषु विरेचनम् ।
मृदु प्रच्छर्दनम् तद्वत्कफजेषु विधीयते ।
S.Su 39/15-16

During premonitory stage of *jvara*, simple *ghee* should be administered to the person who is suffering from *vātaja pūrvarupa* but not associated with *āma*. Mild purgation therapy advised in *pittaja pūrvarupa* stage, emesis therapy advocated in *kaphaja pūrvarupa* stage.

Importance of Pūrvarupa

Diagnostic Importance of Pūrvarupa

1. It is difficult to diagnose the disease only on the basis of *hetu* because same *hetu* is responsible for many diseases. In such circumstances *pūrvarupa* helps to differentiate the disease. For example :

Jvara and *gulma* having the same *nidāna* but *pūrvarupa* of *jvara* & *gulma* are different and accordingly disease will be diagnosed.

2. It is very much difficult to diagnose the disease based on *lakṣaṇa* because some diseases having same set of symptoms which confuses physician to differentiate diseases. In such circmstances *pūrvarupa* helps to diagnose the disease. For example :

हारिद्रवर्णं रुधिरं च मूत्रं विना प्रमेहस्य हि पूर्वरूपैः।
यो मूत्रयेत्तं न वदेत् प्रमेहं रक्तस्य पित्तस्य हि स प्रकोपः।
C.Ci 6/54

Symptoms of *adhoga raktapitta* and *pittaja prameha* mimics, in such condition *pūrvarupa* helps to differentiate both.

Diagnostic criteria of Prameha

प्रमेहपूर्वरूपाणामाकृतिर्यत्र दृश्यते।
किञ्चिच्चाप्यधिकं मूत्रं तं प्रमेहिणमादिशेत्॥
कृत्स्नान्यर्द्धानि वा यस्मिन् पूर्वरूपाणि मानवे।
प्रवृद्धमूत्रमत्यर्थं तं प्रमेहिणमादिशेत्॥
S.S.Ni. 6/22-23

Slight increase in quantity of urine associated with premonitory symptoms is known as patient of *Prameha.*

or

Complete appearance of premonitory symptoms or half of the premonitory symptoms associated with excess urination is known as patient of *Prameha.*

Therapeutic Importance of Pūrvarupa

Prescription of medications in *pūrvarupa* stage is more important for preventing the disease process to further stages. For example :

Intake of *ghee* is advised in *vātika jvara pūrvarupa* stage etc. If treatment started during *pūrvarupa* stage, it becomes easy for management and disease may cure quickly.

Prognostic Importance of Pūrvarupa

If *pūrvarupa* is mild, then disease become curable, otherwise it may become difficult to cure or incurable one, depending upon the nature of *pūrvarupa.*

If all the *pūrvarupa* observed in a case of *jvara* that indicates death of the patient.

CHAPTER

12

Dushya Dushti

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Duśya

Dhātu, Upadhātu, Āhāraja Mala, Dhātu Mala

धातु क्षय वृद्धि लक्षण (Dhātu Kṣaya Vṛddhi Lakṣaṇa)

धातुवृद्धि हेतु (Causative Factors for the Increase of Dhātus)

धातवः खलु शरीराः समानैः समानगुणभूयिष्ठैर्वाऽऽहारविहारैरभ्यस्य मानैर्वृद्धिमाप्नुवन्ति । ह्रासं तु विपरीतैर्विपरीतगुणभूयिष्ठैर्वा । तथाहि देहेधातवो ये गुरवस्ते गुरुभिरैक्यकारितयोपचीयन्ते । लघवस्तु लघुभिस्तद्विपरीतैस्तु पृथक्त्वकारिभिरपचीयन्ते । तस्मादन्येभ्यो द्रव्येभ्योऽपि सुतरां रक्तमाप्याय्यते रक्तेन मांसं मांसेन मेदो मेदसाऽस्थि तरुणास्थ्ना मज्जा मज्ज्ञा शुक्रं शुक्रेणामगर्भेण गर्भः । यत्र त्वेवं लक्षणेन सामान्येन सामान्यवतामाहारविहाराणामसान्निध्यं स्यात् सन्निहितानां चाभ्यवहरणमशक्यं विरुद्धत्वाद् घृणित्वादरुचेरन्यस्माद्वा कारणान्तरात् । तत्र समानगुणभूयिष्ठानामन्य प्रकृतीनामाहारविहाराणामभ्यवहारः श्रेयान् । *A. S. Su 19/14*

Enhancement of *dhātu* takes place by the use of foods and activities which are similar materially or which possess similar properties predominantly or decrease of *dhātu* results opposite to above theory. The *dhātu* which are heavy undergo increase by substances which possess the property of heaviness and those which cause union or compactness and decrease by those which cause separation. That's why inspite of many other substances, *rakta* undergoes increase especially by the use of blood as food, *māmsa* by the consumption of meat (fatty foods), *asthi* by the usage of cartilages as food, *majjā* by the use of marrow as food, *śukra* by the use of seminal fluid, *garbha* (foetus) by the use of egg as food.

The substances having similar qualities, which could be used as food or activities may not be present near by or those which are present near by may not be suitable to be used as food, being either antagonistic causing aversion, tastelessness or due to any other reason. In such circumstances, it is best to make use of substances of similar properties derived from different species possessing identical qualities predominatly.

स्वस्थानस्थस्य कायाग्नेरंशा धातुषु संश्रिताः । तेषां
सादातिदीप्तिभ्यां धातुवृद्धिक्षयोद्भवः ॥34॥
पूर्वो धातुः परं कुर्याद् वृद्धः क्षीणश्च तद्विधम् ।
A.H.Su. 11/34-35

The bio-digestive power (*kāyāgni*) has its portion present in the tissues (*dhātus*). Their vitiation in the quantity, quality or functions gives rise to vitiation of *dhātus*. Thus the concerned *dhātu* is decreased or exacerbated.

दोषा दुष्टा रसैर्धातून् दूषयन्त्युभये मलान् ॥
अधो द्वे सप्त शिरसि खानि स्वेदवहानि च । मला
मलायनानि स्युर्यथास्वं तेष्वतो गदाः ॥

A.H.Su. 11/35-36

Duṣṭa doṣa karma (Functions of the vitiated doṣās)

The increased *rasadhātu* could in turn also increase the *raktadi dhātus*. Both *doṣās* and *dhātus* together vitiate the waste products (*malās*) that in turn, vitiate the channels of their elimination (*malāyanas*) (that are two below, seven in the head,) and the channels of sweat. Due to vitiation of these channels leading to development of many diseases.

धातुवृद्धि लक्षण (Dhātuvṛddhi Lakṣaṇa)

If *dhātu* aggravates or become excess develops following symptoms are as follows–

रसधातु वृद्धि लक्षण [Rasadhātu vṛddhi Lakṣasṇa (Symptoms of excacerbated rasa dhātu)]

रसोऽतिवृद्धो हृदयोत्क्लेदं प्रसेकं चापादयति । *S. Su 15/9*

प्रसेकारोचकास्यवैरस्यहृल्लासस्त्रोतोरोधस्वादुद्वेषाङ्गमर्दादिभिरन्यैश्च श्लेष्म-विकारप्रायैः रसः । *A. S. Su 19/7*

रसोऽपि श्लेष्मवत् ॥ *A. H. Su 11/8*

- *Praseka*–salivation
- *Arocaka*–anorexia
- *Āsya vairasya*–bad taste in mouth
- *Hṛllāsa*–nausea
- *Srotorodha*–obstruction in channels
- *Svadu dveṣa*–aversion towards sweet products
- *Añgamarda*–general Malaise
- *Hṛdayotkleda*–oppression in the heart
- *Śleṣma vikāra*–other symptoms of increased *kapha.*

रक्तधातु वृद्धि लक्षण (Symptoms of aggravated rakta dhātu)

रक्तं रक्ताङ्गाक्षितां सिरापूर्णत्वं च । *S. Su 15/14*

कुष्ठविसर्पपिटकासृग्दराक्षिमुखमेढ्रगुददाहगुल्मविद्रधिप्लीहव्यङ्गकामलाग्निनाशतमः प्रवेश रक्ताङ्गनेत्रता-वातरक्तपित्तादिभिरन्यैश्च पित्तविकारप्रायैरसृक् । *A. S. Su 19/4*

रक्तं विसर्पप्लीहविद्रधीन् ॥
कुष्ठघातास्रपित्तास्रगुल्मोपकुशकामलाः ।
व्यङ्गाग्निनाशसम्मोहरक्तत्वङ्नेत्रमूत्रताः ॥
A. H. Su 11/8-9

- *Kuṣṭha*–dermatological disorders including leprosy
- *Visarpa*–herpes infections
- *Piṭakā*–skin eruptions like boils, pustules etc.
- *Asṛgdarā*–menorrhagia
- *Akṣi, mukha, meḍhra, guda dāha*–burning sensation in eyes, mouth, urethra & rectum
- *Gulma*–abdominal growths
- *Vidradhi*–abscesses
- *Plihā*–splenic disorders
- *Vyañga*–discolouration of skin
- *Kāmalā*–jaundice
- *Agni nāśa*–loss of digestive fire
- *Tamaḥ praveśa*–darkness infront of eyes
- *Raktāñga-twak-netra-mutrtā*-reddish discolouration in the skin, eyes and urine
- *Vāta rakta*–metabolic joint disorders
- *Pitta vikāra*–symptoms of increased *pitta*
- *Sirā purṇatvam*–fullness of blood vessels
- *Rakta pitta* (*pittāsra*)–bleeding disorders
- *Upakuśa*-disease of the teeth
- *Sammoha*-coma

मांसधातु वृद्धि लक्षण [Māmsadhātu vṛddhi Lakṣaṇa (Symptoms of aggravated māmsa dhātu)]

मांसं स्फिग्गण्डौष्ठोपस्थोरुबाहुजङ्घासु वृद्धिं गुरुगात्रतां च ।
S. Su. 15/14

गलगण्डगण्डमालार्बुदग्रन्थि तालुजिह्वाकण्ठरोगस्फिग्गलौष्ठबाहूदरोरुजङ्घागौरववृद्धिभिः श्लेष्मरक्तविकार प्रायैश्च मांसम् ।
A. S. Su 19/4

मांसं गण्डार्बुदग्रन्थिगण्डोरूदरवृद्धिताः ।
कण्ठादिष्वधिमांसं च....। *A. H. Su 11/10*

- *Galagaṇḍa*–enlargement of glands in neck
- *Gaṇḍamālā*–enlargement of glands in *scrofula*
- *Arbuda*–malignant tumours
- *Granthi*–benign growths
- *Gaṇḍa-uru-udaravṛddhi*–increase in the size of cheeks, thighs and stomach
- *Kaṇṭhadiṣwadhimāṁsa*–Prominence in the muscles of the neck and other places
- *Tālu jihvā kaṇṭha Roga*–diseases of palate, tongue & throat
- *Sphik galousṭha bāhū udaroru jañghā gaurava vṛddhi*–produces heaviness and increase in size of the buttocks, neck, lips, arms, abdomen, chest and thighs.
- *Śleṣma vikāra and rakta vikāra* (Symptoms of increased *śleṣma* and *rakta*)
- *Guru gātratā*–heaviness in body

मेदधातु वृद्धि लक्षण [Medadhātu Vṛddhi Lakṣaṇa (Symptoms of aggravated meda dhātu)]

मेदः स्निग्धाङ्गतामुदरपार्श्ववृद्धिं कासश्वासादीन् दौर्गन्ध्यं च ।
S. Su 15/14

प्रमेहपूर्वरूपैः स्थौल्योपद्रवैश्चान्यैरपिश्लेष्मरक्तमांसविकारप्रायैर्मेदः । *A. S. Su 19/4*

–तद्वन्मेदस्तथा श्रमम् । अल्पेऽपि चेष्टिते श्वासं स्फिक्स्तनोदरलम्बनम् ॥ *A. H. Su 11/10-11*

- *Prameha pūrvarupa*–premonitory symptoms of *prameha*
- *Sthaulya*–obesity
- *Sthaulyopadrava*–complications of obesity

- *Śleṣma rakta māmsa vikāra*–Symptoms of aggravated *śleṣma*, *rakta* and *māmsa*
- *Snigdhāñgatā*–unctousness of the body
- *Udara parśva vṛddhi*–increase of the abdomen and flanks
- *Kāsa*–cough
- *Śvāśa*–breathing disorders
- *Daurgandhya*–bad smell emits from the body
- *Śrama*–fatigue
- *Alpeapiceṣṭiteśvāsam*-breathlessness even after slight work
- *Sphikstanaudaralambanam*-drooping of the buttocks

अस्थिधातु वृद्धि लक्षण [Asthi Dhātuvṛddhi Lakṣaṇa (Symptoms of aggravated asthi dhātu)]

अस्थ्यध्यस्थीन्यधिदन्तांश्च । *S. Su 15/14*
अध्यस्थिभिरधिदन्तैश्चास्थि । *A. S. Su 19/4*
अस्थ्यध्यस्थधिदन्तांश्च। *A. H. Su 11/11*

- *Adhyasthi*–extra bones
- *Adhi danta*–extra teeth

मज्जाधातु वृद्धि लक्षण [Majjādhātu vṛddhi Lakṣaṇa (Symptoms of aggravated majjā dhātu)]

मज्जा सर्वाङ्गनेत्रगौरवं च । *S. Su 15/14*
नेत्राङ्ग-रक्तगौरवैः पर्वसु च स्थूलमूलारुर्भिर्मज्जा ।
A. S. Su 19/4

...मज्जा नेत्राङ्गगौरवम् ॥
पर्वसु स्थूलमूलानि कुर्यात्कृच्छ्राण्यरूंषि च ।
A. H. Su 11/11-12

- *Netrāñga rakta gaurava*–heaviness in eyes, body and blood
- *Parvasu ca sthūla*–swelling in joints
- *Mūlārubhi*–appearance of small ulcers over skin
- *Kṛcchranya-aruṣi*– ulcers that are difficult to cure.

शुक्रधातु वृद्धि लक्षण [Śukradhātu Vṛddhi Lakṣaṇa (Symptoms of aggravated Śukra)]

शुक्रं शुक्राश्मरीमतिप्रादुर्भावं च । *S. Su. 15/14*
अतिस्त्रीकामताशुक्राश्मरीसम्भवाभ्यांशुक्राधिक्यम् ।
A. S. Su. 19/4

अतिस्त्रीकामतां वृद्धं शुक्रं शुक्राश्मरीमपि ॥
A. H. Su 11/12

- *Ati śtrī kāmatā*–great desire for sexual intercourse
- *Śukrāśmari*–development of stone in the seminal tract
- *Śukrāti prādurbhāva*–excess production of *śukra*

धातुक्षय हेतु (Causative Factors for the Decrease of Dhātus)

The following diets are responsible for the depletion of *dhātus* C.S.Ci. 1-2/3

Grāmya Āhāra (domestic food and lifestyle)

Gramya Āhāra (poor quality diet) is described below:

- Excess intake of *Āmla* (Sour), *Lavaṇa* (salt), *Kaṭu* (pungent) taste food
- Excess intake of *Kṣāra* (alkaline), *Śuṣka Śāka* (dry green vegetables), *Śuṣka Māṁsa* (dry meat), *Tila/ Acurnata Tila* (seasum seeds), *Tila Palala/ Tila Cūrṇa* (paste of sesame seeds and pastries)
- *Piṣṭānna bhojana*- food prepared from flour like cake and pastries
- *Viruddha Nava Śuka Śami Dhānya* (germinated cereals and pulses, freshly harvested corns with bristles and pulses)
- *Viruddha* (intake of antagonistic food)
- *Asātmya* (unwholesome foods)
- *Klinna, Guru, Pūtī Paryuṣita Bhojana* (softened, moist, heavy, putrid and stale food),
- *Viṣamāṣana* (eating at irregular intervals)
- *Adhyaśana* (eating too soon after a meal without the digestion of previous meal)

Habits that cause illness

- *Divasvapna* (day sleep)
- *Strī Madya Nitya* (habitual indulgence in sex and alcohol)
- *Viṣama and Ati Vyāyama* (irregular and excessive exercise),
- *Bhaya* (fear), *Krodha* (anger), *Śoka* (grief), *Lobha* (greed), *Moha* (confusion), *Āyāsa Bahula* (exhaustion due to overstrain).

Effect of Grāmya Āhāra Sevana –

The intake of such *Grāmyāhāra* (domestic food and Lifestyle) causes :

1. *Śithilatā*- slackening of muscle tissue compactness
2. *Vimucyante Sandhi* - Looseness/detachment of joint
3. *Vidahyate Rakta* - Blood gets inflamed & burnt
4. *Viṣyandate Alpa Meda*- increased free fatty acids
5. *Na Sandhiyate Asthisu Majjā*- Marrow does not mature in bones
6. *Śukra Na Pravartate* -less formation of Semen
7. *Kṣaya Ojas*- Oja deteriorates

The person suffers from malaise, despair, hypersomnia and excessive sleepiness, drowsiness, lassitude, lack of enthusiasm, difficulty in breathing, unable to execute physical and mental activities, loss of memory, intellect and luster, becomes resort of illness and thus does not enjoy the normal life span.

Hence looking into these effects on individual one should avoid from all the above said unwholesome diet and activities so that becomes suitable for the utility of *Rasāyana* treatment said this by *Lord Punarvasu Atreya*.

धातुवृद्धि हेतु (Causative Factors for the Increase of Dhātus)

धातुक्षय लक्षण (Dhātukṣaya Lakṣaṇa)

रसधातु क्षय लक्षण [Rasadhātu kṣaya Lakṣaṇa (Symptoms of diminished rasa dhātu)]

घट्टते सहते शब्दं नोच्चैद्रवति शून्यते।
हृदयं ताम्यति स्वल्पचेष्टस्यापि रसक्षये ॥
C.S.Su 17/63

शब्दासहत्वहृदयद्रवकम्पशोषशून्यतास्पन्दनघट्टनैरल्पयापि च चेष्टया श्रम-तर्षाभ्यां रसः। *A. S. Su 19/6*

रसक्षये हृत्पीडा कम्पः शून्यता स्तृष्णा च। *S. Su 15/9*

रसे रौक्ष्यं श्रमः शोषो ग्लानिः शब्दासहिष्णुता।
A. H. Su 11/17

- *Śabdāsahatva*–inability to withstand noise
- *Raukṣyam*–roughness
- *Glāni*–exhaustion even without any work
- *Śrama*–fatigue
- *Hṛdaya drava*–tachycardia
- *Kampa*–tremors
- *Śoṣa*–emaciation
- *Śūla*–pain
- *Śūnyatā*–emptiness in organs espescially heart
- *Spandana*–throbbing pulsations
- *Ghaṭṭana*–friction
- *Alpayāpi ca ceṣṭayāśrama*–exhaustion with little activity
- *Tarṣā*–feeling of fear
- *Hṛtpiḍā*–pain in chest
- *Tṛsṇā*–thirst

रक्तधातु क्षय लक्षण [Raktadhātu kṣaya Lakṣaṇa (Symptoms of depleted rakta dhātu)]

परुषा स्फुटिता म्लाना त्वग्रूक्षा रक्तसंक्षये।
C.S.Su 17/64

त्वग्रौक्ष्याम्लशीताभिलाषसिराशैथिल्यैरसृक्।
A.S.Su 19/6

शोणितक्षये त्वक्पारुष्यमम्लशीतप्रार्थना सिराशैथिल्यं च।
S.S.Su 15/9

रक्तेऽम्लशिशिरप्रीतिशिराशैथिल्यरूक्षताः ॥
A. H. Su 11/17

- *Tvak rukṣatā*–dryness in skin
- *Tvak pāruṣya*–roughness in skin
- *Āmla śitābhilāṣā*–desire for sour and cold things
- *Sirāśaithilya*–looseness of veins or collapse of veins
- *Mlānā*–loss of complexion

मांसधातु क्षय लक्षण [Māmsadhātu kṣaya Lakṣaṇa (Symptoms of decreased māmsa dhātu)]

मांसक्षये विशेषेण स्फिग्ग्रीवोदरशुष्कता।
सन्धीनां स्फुटनं ग्लानिरक्ष्णोरायास एव च।
C.S.Su 17/65-72

स्फिग्गण्डादिशुष्कतातोदरौक्ष्याक्षग्लानिसन्धि स्फोटनधमनीशैथिल्यैर्मांसम्। *A. S. Su 19/6*

मांसक्षये स्फिग्गण्डौष्ठोपस्थोरुवक्षः कक्षापिण्डिकोदरग्रीवा-शुष्कता रौक्ष्यतोदौ गात्राणां सदनं धमनीशैथिल्यं च।

S. Su 15/9

मांसेऽक्षग्लानिगण्डस्फिक्शुष्कतासन्धिवेदनाः ।

A. H. Su 11/18

- *Sphik, ganḍādi śuṣkatā*–wasting of buttocks, cheeks & other parts
- *Toda*–pain
- *Raukṣyākṣa*–dryness in eyes
- *Glāni*–debility in sense organs
- *Sandhi sphoṭana*–cracking sound in the joints
- *Sandhi vedana*–pain in the joints
- *Dhamani śaithilya*–collapse of blood vessels
- *Sphik gonḍauṣṭopasthorū vaksaḥ kakṣā pinḍikodara grivā suṣkatā*–wasting of buttocks, cheeks, lips, penis, thigs, chest, axilla, calves, abdomen and neck
- *Gātra sadana*–debility

मेदधातु क्षय लक्षण [Meda Dhātukṣaya Lakṣaṇa (Symptoms of diminished meda dhātu)]

लक्षणं मेदसि क्षीणे तनुत्वं चोदरस्य च॥

C.S.Su 17/66

प्लीहवृद्धिकटीस्वापसन्धिशून्यताङ्गरौक्ष्यकार्श्यश्रमशोषमेदुरमांसाभिला-षैर्मांसक्षयोक्तैश्चमेदः । *A. S. Su 19/6*

मेदःक्षये प्लीहाभिवृद्धिः सन्धिशून्यता रौक्ष्यं मेदुरमांसप्रार्थना च । *S. Su 15/9*

मेदसि स्वपनं कट्याः प्लीह्नो वृद्धिः कृशाङ्गता ॥

A. H. Su 11/18

- *Plīha vṛddhi*–enlargement of spleen
- *Kaṭi svāpa*–loss of sensation in waist
- *Sandhi śūnyatā*–emptiness in joints
- *Añga raukṣya*–roughness in body
- *Kārśya*–emaciation
- *Āyāsa*–exhaustion
- *Śrama*–fatigue
- *Tanutva udara*–thinness of abdomen
- *Śoṣa*–depletion of *dhātus* or tuberculosis
- *Meduramāmsābhilāṣā*–desire for fatty meat
- *Māmsa kṣaya lakṣaṇa*–other *māmsa kṣaya* symptoms
- *Sandhi sphuṭana*–cracking noise in joints
- *Glānirakṣṇo*–lassitude in the eyes

अस्थिधातु क्षय लक्षण [Asthidhātu kṣaya Lakṣaṇa (Symptoms of diminished asthi dhātu)]

केशलोमनखश्मश्रुद्विजप्रपतनं श्रमः ।
ज्ञेयमस्थिक्षये लिङ्गं सन्धिशैथिल्यमेव च ॥

C.S.Su 17/67

दन्तनखरोमकेशशातनरौक्ष्यपारुष्यसन्धिशैथिल्यास्थितो-दास्थिबद्धमांसाभिलाषैरस्थि । *A. S. Su 19/6*

अस्थिक्षयेऽस्थिशूलं दन्तनखभङ्गो रौक्ष्यं च । *S. Su 15/9*

अस्थ्न्यस्थितोदः शदनं दन्तकेशनखादिषु ।

A. H. Su 11/19

- *Danta nakha bhañga*–breaking of teeth & nails
- *Danta nakha roma keśa śātana*–falling of teeth, nails and body hairs
- *Rauksya*–roughness
- *Pārusya*–dryness
- *Sandhi śaithilya*–looseness in joints
- *Asthi toda (śula)*–pain in bones
- *Asthi baddha māmsābhilāṣā*–Craving for meat attached to bones for consumption
- *Śadanam dantakeśanakhadiṣu*–falling of the teeth, hair, nails

मज्जाधातु क्षय लक्षण [Majjādhātu kṣaya Lakṣaṇa (Symptoms of diminished majjā dhātu)]

शीर्यन्त इव चास्थीनि दुर्बलानि लघूनि च ।
प्रततं वातरोगीणि क्षीणे मज्जनि देहिनाम् ॥

C.S.Su 17/68

अस्थिसौषिर्यनिस्तोददौर्बल्यभ्रमतमोदर्शनैर्मज्जा ।

A. S. Su 19/6

मज्जक्षयेऽल्पशुक्रता पर्वभेदोऽस्थिनिस्तोदोऽस्थिशून्यता च ।

S. Su 15/9

अस्थ्नां मज्जनि सौषिर्यं भ्रमस्तिमिरदर्शनम् ॥

A. H. Su 11/19

- *Asthi sauṣirya*–hollowness in bones
- *Asthi niṣtoda*–pain in bodies
- *Daurbalya*–debility
- *Bhrama*–giddiness
- *Tamo darśana*–feeling of darkness in front of eyes
- *Alpa śukratā*–less quantity of semen

- *Parva bheda*–pain in joints
- *Śiryanta*–thinness of bones
- *Asthini durbalāni laghuni*–weakness and lightness in bones
- *Pratatam vāta Rogi*–suffers from *vātavyādhi* always

शुक्रधातु क्षय लक्षण [Śukradhātu kṣaya Lakṣaṇa (Symptoms of aggravated śukra dhātu)]

दौर्बल्यं मुखशोषश्च पाण्डुत्वं सदनं श्रमः।
क्लैब्यं शुक्राविसर्गश्च क्षीणशुक्रस्य लक्षणम्॥

C.S.Su 17/69

श्रमदौर्बल्यास्यशोषतिमिरदर्शनाङ्गमर्दपाण्डुतासदनक्लैब्य-मुष्कतोदमेढ्रधूमायनैश्चिराच्च निषेकेण सरक्तनिषेकेण वा शुक्रम्।

A. S. Su 19/6

शुक्रक्षये मेढ्रवृषणवेदनाऽशक्तिर्मैथुने चिराद्वा प्रसेकः प्रसेके चाल्परक्तशुक्रदर्शनम्। *S. Su 15/9*

शुक्रे चिरात् प्रसिच्येत शुक्रं शोणितमेव वा।
तोदोऽत्यर्थं वृषणयोर्मेढ्रं धूमायतीव च॥

A.H.Su 11/20

- *Śrama*–exhaustion
- *Daurbalya*–debility
- *Āsyaśoṣa*–dryness in mouth
- *Timira darśana*–feeling of darkness in front of the eyes
- *Aṅga marda*–body aches
- *Pāṇḍutā*–pallor or anaemia
- *Sadana*–poor digestion
- *Klaibya*–impotency
- *Muṣkatoda*–pain in the scroatum
- *Meḍhra dhūmāyana*–feeling as if hot fumes emitted from the path of urethra
- *Cirāscha niṣekeṇa*–delayed ejaculation
- *Sarakta niṣekeṇa*–ejaculation mixed with blood
- *Meḍhra vṛṣaṇa vedana*–pain in penis & testis
- *Aśaktimaithune*–unable to perform intercourse
- *Śukra avisarga*–non ejaculation of semen
- *Meḍram dhūmāyativa*–feeling of hot fumes coming out of the urethra

उपधातु प्रदोषज विकार (Upadhātu pradoṣaja vikāra)

स्नायौ सिराकण्डराभ्यो दुष्टाः क्लिश्नन्ति मानवम्।
स्तम्भसंकोच खल्लीभिग्रन्थिस्फुरणसुप्तिभिः॥

C.S.Su 28/21

When abnormal *doṣā* enter *upadhātu* i.e. *stanya, ārtava, sirā, kaṇḍara, vasā, tvak, snāyu* manifest stiffness, contraction, neuralgia of the extremities, new growths, throbbing sensation and numbness.

1. Diseases of *stanya* and *ārtava* are discussed in *Srotas* chapter.
2. Diseases of *sirā* are *pakṣāghāta, sirāgraha, avabāhuka* and other *pittaja vikāra.*
3. Diseases of *kaṇḍarā* (tendons) are *sandhivāta, āmavāta, vātarakta, viśvāci, khañja* etc.
4. Diseases of *vasā* (muscle fat) are *prameha, kuṣtha* etc.
5. Diseases of *tvak* (skin) are *kuṣṭha, pāṇḍu, kāmalā, visarpa, vātarakta* etc.
6. Diseases of *snāyu* (ligaments) are *pakṣāghāta, sandhivāta, āmavāta, vātarakta* etc.
7. Diseases of *ojas* are *hataujasa jvara, ojonirodhaja jvara, madhumeha* etc.

उपधातु प्रदोषज विकार (Upadhātu Pradoṣaja Vikāra)

स्नायौ सिराकण्डराभ्यो दुष्टाः क्लिश्नन्ति मानवम्।
स्तम्भसंकोच खल्लीभिग्रन्थिस्फुरणसुप्तिभिः।

C.S.Su. 28/21

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1. Diseases of *stanya* and *ārtava* are discussed in *srotas* chapter.
2. Diseases of *sirā* are *pakṣāghāta, sirāgraha, avabāhuka* and other *pittaja vikāra.*
3. Diseases of *kaṇḍarā* (tendons) are *sandhivāta, āmavāta, vātarakta, viśvāci, khañja* etc.
4. Diseases of *vasā* (muscle fat) are *prameha, kuṣtha* etc.
5. Diseases of *tvak* (skin) are *kuṣṭha, pāṇḍu, kāmalā, visarpa, vātarakta* etc.

6. Diseases of *snāyu* (ligaments) are *pakṣāghāta, sandhivāta, āmavāta, vātarakta* etc.
7. Diseases of *ojas* are *hataujasa jvara, ojonirodhaja jvara, madhumeha* etc.

मल प्रदोषज विकार (Mala Pradoṣaja Vikāra)

मलानाश्रित्य कुपिता भेद शोष प्रदूषणम्।
दोषा मलानां कुर्वन्ति सङ्गोत्सर्गावतीव च ॥
C.S.Su. 28/22

When agitated *doṣa* come in contact with *mala* produce breaking up of waste products, drying up of the waste substances, become vitiated by changing normal colour & consistency. Excessive retention of waste substances or excessive elimination of waste products. All the above phenomena indicates the development of vitiation in waste products as a result disease manifests in respective vitiations. For example : If vitiation manifest in stool, develops disorders related to stool abnormality. Diseases manifest due to vitiation of waste product by vitiated *doṣā* are as follows.

- Diseases of urine : *Prameha, mūtrāghāta, mūtrakṛcchra, aśmari* etc.
- Diseases of stool : *Atisāra, grahaṇi roga, pravāhikā, alasaka, visūcikā, viṣṭambhi* etc.
- Diseases of *rasadhātumalarupi kapha : Kṣayaja kāsa, rājayakṣmā* etc.
- Diseases of *raktadhātumalarupi pitta Pāṇḍu, rakta pitta, kāmalā* etc.
- Diseases of *māmsadhātumalarupi khamala* Ear, eye, nose, mouth & genital organ disorders.
- *Medadhātugata malarupi sveda Jvara, udara, kuṣṭha, prameha* etc.
- *Asthidhātugata malarupi keśa* and *loma Khālitya, pālitya* etc.
- *Majjādhātugata malarupi sneha :* Diseases of eyes, stool and skin.
- *Śukradhātugata malarupi ojovikṛti Ojokṣaya, ojovyāpat, ojovisramsa, grahaṇi doṣa* etc.

इन्द्रिय प्रदोषज विकार (Indriya Pradoṣaja Vikāra)

इन्द्रियाणि समाश्रित्य प्रकुप्यन्ति यदा मलाः।
उपघातोपतापाभ्यां योजयन्तीन्द्रियाणि ते।
C.S.Su 28/20

When vitiated *doṣās* enters the sense organs manifest partial or complete deformity in respective organs.

Diseases of hearing, vision etc. discussed in detail elsewhere in this book.

Abnormal *doṣa* brings abnormality in sense organs by manifesting symptoms like emptiness, lightness and dryness in respective sense organs. It is all due to their diminution.

इत्यसात्म्यर्थसंयोगस्त्रिविधो दोषकोपनः। *C.Śā 1/126*

Three types of unwholesome contact i.e. over utilisation, non utilization and improper utilization of senses with their respective objects leading to aggravation of *doṣā*.

असात्म्यमिति तद्विद्याद्यन्न याति सहात्मताम्।
C.S.Sā 1/127

A substance which is not conducive to body physiology is called *asātmya* or unwholesome.

असात्म्यमिति दुःखानाम्।
C.S.Sā 11/127 (Cakrapāṇi)

Which causes discomfort or miseries is called *asātmya.*

मिथ्यातिहीनयोगेभ्यो यो व्याधिरुपजायते।
शब्दादीनां स विज्ञेयो व्याधिरैन्द्रियको बुधैः।
C.S.Sā 1/128

Disease *'Indriyaka'* manifest due to wrong utilization, excessive utilization and non utilization of sense faculties like *śabdādi* five sense organs.

एन्द्रियक इति इन्द्रियद्वारभूतः।
C.S.Sā 1/128 (Cakrapāṇi)

Disease *Endriyaka* manifest due to impairment of sense organs.

वेदनानामशान्तानामित्येते हेतवः स्मृताः।
C.S.Sā 1/129

Unwholesome contact with sense organs leading to genesis of miseries.

मानस (Mānasa)

रजस्तमश्च मानसौ दोषौ तयोर्विकाराः काम क्रोध लोभ मोहेर्ष्यामानमद शोक चित्तोद्वेग भय हर्षादयः। *C.S.Vi. 6/5*

Raja and *tama* are two *mānasika doṣa* and diseases manifest due to their abnormality are comes under *mānasa vikāra.*

Examples :

Kāma (passion)
Lobha (greed)
Irṣyā (envy)
Mada (narcosis)
Cittodvega (excitement)
Harṣa (exhilaration)
Krodha (anger)
Moha (confusion)
Māna (conceit)
Śoka (anxiety)
Bhaya (fear)

उभय (Ubhaya)

तत्र मनोऽधिष्ठानाः क्रोधादयः शरीराधिष्ठाना ज्वरादयः, उभयादिष्ठाना अपस्मारादयः । *S.Su 1/26 (Dalhaṇa)*

Krodhādi vikārās are those manifest due to morbidity in *manas* and *jvarādi rogās* manifest due to affliction of *vātādi doṣa* and *apasmārādi roga's* manifest by afflicting both *śāririka* and *mānasika doṣa.*

Importance of Manas

तत्रमनसोमनोबुद्धेश्च त एवसमानातिहीनमिथ्यायोगाः प्रकृतिविकृतिहेतवोभवन्ति ।*(C.S.Su. 8/16)*

Cintana (thinking) is the object of *Mana* (mind), the *Sama Yoga* (proper), *Atiyoga* (excessive), *Hīnayoga* (non utilization) and *Mithyāyoga* (wrong utilization) of mind is responsible for normal or abnormal mental knowledge or conditions.

मनएवमनुष्याणांकारणंबन्धमोक्षयोः।

The reason behind *Bandhana* and *Mokṣa* is *Manas.*

Sattvāvajaya treatment is based on the treatment of state of mind.

चेष्टाप्रत्ययभूतमिन्द्रियाणाम ।

Manas is the driving force for all the sense faculties.

यदा तु मनसिक्लान्तेकर्मात्मानःक्लमान्विताः । विषयेभ्योनिवर्तन्तेतदास्वपितिमानवः ।*(C.S.Su. 21/35)*

Sensory and motor organs of the body work in collaboration with *Manas* otherwise no such function takes place and the individual goes to sleep in the case of exhaustion.

CHAPTER

13

Samprapti

परिभाषा (Paribhāṣa)

यथादुष्टेन दोषेण यथा चानुविसर्पता ।
निवृत्तिरामयस्यासौ सम्प्राप्तिर्जातिरागतिः ॥
A.Hr.Ni 1/8

Process of understanding of development of disease by the vitiated *doṣā's* which are constantly circulating inside the body. It is also called *jāti* and *āgati*.

अत्रैके व्याधिजन्ममात्रमन्त्यकारणव्यापारजन्यं संप्राप्तिमाहुः ।
C.Ni 1/11 (Cakrapāṇi)

Factors which finally determines the manifestation of a disease is called *saṁprāpti*.

तस्माद्व्याधिजनक दोषव्यापार विशेषयुक्तं व्याधिजन्मेह संप्राप्तिः । *C.Ni 1/11 (Cakrapāṇi)*

Disease manifest due to specific actions of the *doṣās* and understanding of such events is called *saṁprāpti*.

नानाविधा हि दोषाणां दुष्टिः प्राकृती वैकृती वा, अनुबन्ध्यरुपा अनुबन्धरुपा वा, एकशो द्विशो वा समस्ता वा, रौक्ष्यादिभिः सर्वैर्भावैरल्पैर्वा, एवमादि दुष्टिदुष्टेन दोषेण या आमयस्य रोगस्य निवृत्तिरुत्पत्तिःसा संप्राप्रिरुच्यते । *M.Ni 1/10 (Madhukoṣa)*

Vitiation of *doṣā* takes place in various ways like *prākṛta, vaikṛta, anubandhya, anubandha, ekadoṣaja, dvidoṣaja* and *tridoṣaja*. It all depends on various etiological factors. Abnormal *doṣās* brings abnormality in *dhātus, malās, kalās* etc and manifest diseases and understanding of such events is called *saṁprapti*. Agitated *doṣās* circulates either in upper direction, lower direction or both.

तस्माद्दोषेति कर्तव्यतोपलक्षितं व्याधि जन्म संप्राप्तिः न तु केवलं जन्मेति । *M.Ni 1/10 (Madhukoṣa)*

Saṁprāpti means knowing the factors which are responsible for the genesis of disease and not only knowing the disease.

संप्राप्तिः पुनरेवंदुष्टो दोषस्तेन चैवमारब्धो ।
A.S.Ni 1/11

How the disease manifested due to imbalanced *doṣās* is called *saṁprāpti*.

संप्राप्ति पर्याय (Synonyms of Saṁprāpti)

संप्राप्तिर्जातिरागतिरित्यनर्थान्तरम् व्याधेः ।
C.Ni. 1/11

Saṁprāpti, jāti and *āgati* are synonymous to each other.

व्याधिस्तत्पर्याया जातिरगतिर्निर्वृत्तिर्निष्पत्तिरिति ।
C.Ni. 1/11 (Cakrapāṇi)

Jati, āgati, nivṛtti and *niṣpatti* are synonyms to *saṁprāpti*. *Saṁprāpti* is described at the end of the *nidāna pañcaka* even though symptoms appear after the pathogenesis but knowledge of *liṅga* (symptom) is more important than *saṁprāpti* for the diagnosis of the disease. That's why *saṁprāpti* described at the end.

संप्राप्ति भेद (Classification of Saṁprāpti)

सा संख्याप्राधान्य विधिविकल्प बलकाल विशेषैर्भिद्यते ।
C.Ni. 1/11

Sankhyā, prādhānya, vidhi, vikalpa, bala, kāla are the six types of *saṁprāpti*.

संख्या संप्राप्ति (Enumeration of Diesease)

संख्या तावद्यथा-अष्टौ ज्वराः, पञ्च गुल्माः सप्त कुष्ठान्येवमादिः । *C.Ni. 1/11*

Sankhya Saṁprāpti deals with the subclassification of disease like

- *Jvara* is of eight types
- *Gulma* is of five types
- *Kuṣṭha* is of seven types
- *Kāsa* is of five types etc.

प्राधान्य संप्राप्ति (Degree of Doṣic Vitiation)

प्राधान्यं पुनर्दोषाणां तरतमाभ्यामुपलभ्यते ।
तत्र द्वयोस्तरः, त्रिषु तम इति ।
C.Ni. 1/11

It helps for the identification of dominance of *doṣās* in case of two or more *doṣās* are involved. For Example : In case of two *doṣa*, the word *'tara'* is used to denote its dominancy in comparison to other *doṣās*.

In case of three *doṣa* involvement the word '*tama*' is used to demonstrate its dominancy with other two *doṣās*.

विधिसंप्राप्ति (Variety of Diseases)

विधिर्नाम-द्विविधा व्याधयो निजागन्तुभेदेन, त्रिविधास्त्रिदोष भेदेन, चतुर्विधाः साध्यासाध्यमृदुदारुण भेदेन। *C.Ni. 1/11*

Vidhi means variety of diseases like two varieties of diseases i.e. *nija* (endogenous) and *āgantuja* (exogenous); three varieties of *doṣās* based on their vitiation; four varieties of diseases based on prognosis of disease i.e. curable, incurable, mild and acute.

प्राधान्यं व्याधीनामनुबन्ध्यानुबन्धक भेदा।
A.S.Ni 1/12

Prādhānya means it indicates whether the disease is primary or predominant and secondary or associated.

विकल्प संप्राप्ति (Proportional Analysis of Doṣa)

समवेतानां पुनर्दोषाणामंशांशबलविकल्पो विकल्पोऽस्मिन्नर्थे।
C.Ni. 1/11

This indicates the proportional analysis of the qualities of the *doṣās* involved.

For example : In case of *vāta* involvement whether *samāna, vyāna, apāna, prāṇa, udāna* is involved either singly or mixing of two or all, such observation can be understood by the knowledge of *vikalpa saṁprāpti.*

Vikalpa saṁprāpti also helps to detect the qualitative, quantitative, functional aggravation of the *doṣās.* Cold vitiates *vāta* quickly than light or rough substances.

बल संप्राप्ति (Strength of Disease)

बलाबल विशेषो हेत्वादिकात्स्न्यावयव विभावनया।
A.S.Ni 1/12

Understanding of the strength of the disease based on causative factors, area of involvement, organ involved, age etc. helps to assess the strength of disease.

काल संप्राप्ति (Time Factors)

बलकाल विशेषः पुनर्व्याधीनामृत्वहोरात्राहारकाल विधिविनियतो भवेत्। *C.Ni 1/12*

This indicates the time of aggravation of *doṣās* in relation to season, various timing of the day, night and intake of food.

Kapha jvara in *vasanta ṛtu. kapha jvara* aggravates in fore noon and early night, *kapha jvara* aggravates just after intake of food. Aggravating and relieving factors of the disease may be understood by this.

संप्राप्ति घटक (Saṁprāpti ghaṭaka)

Contributory factors for the development of disease *(saṁprāpti ghaṭakās)* are as follows.

1. Śārīrika Doṣa

- **Aṁśāṁśa kalpanā**

Vāta	*Pitta*	*Kapha*
Samānavāta	*Pācakapitta*	*Tarpaka kapha*
Vyānavāta	*Bhrājakapitta*	*Bhodakakapha*
Prāṇavāta	*Rañjakapitta*	*Śleṣmakakapha*
Apānavāta	*Sādhakapitta*	*Avalambaka-kapha*
Udānavāta	*Ālocakapitta*	*Kledakakapha*

- Assessment of *Guṇataḥ vṛddhi kṣaya Karmataḥ vṛddhi kṣaya Dravyataḥ vṛddhi kṣaya*
- *Nānātmaja vikāra and Sāmanyaja vikāra*

2. Mānasika Doṣa

रजस्तमश्च मानसौ दोषौ तयोर्विकाराः काम क्रोध लोभ मोहेर्ष्यामानमद शोक चित्तोद्वेग भय हर्षादयः। *C.Vi. 6/5*

Raja and *tama* are two *mānasika doṣa* and diseases manifest due to their abnormality are comes under *mānasa vikāra.*

Examples :

Kāma (passion)
Lobha (greed)
Irṣyā (envy)
Mada (narcosis)
Cittodvega (excitement)
Harṣa (exhilaration)
Krodha (anger)
Moha (confusion)
Māna (conceit)
Śoka (anxiety)
Bhaya (fear)

3. Ubhaya Doṣa (Śārīrika Doṣa and Mānasika Doṣa)

तत्र मनोऽधिष्ठानाः क्रोधादयः शरीराधिष्ठाना ज्वरादयः, उभयादिष्ठाना अपस्मारादयः। *S.Su 1/26 (Dalhaṇa)*

Krodhādi vikārās are those manifest due to morbidity in *manas* and *jvarādi rogās* manifest due to affliction of *vātādi doṣa* and *apasmārādi roga's* manifest by afflicting both *śāririka* and *mānasika doṣa.*

4. Dūṣya Doṣa

Saptadhātu
Śāririka mala
Upadhātu
Saptadhātu mala

5. Agni

Jaṭharāgni → Manda, Viṣama, Tīkṣṇa, Atyagni (Bhasmakāgni)
Dhātvāgni → Manda, Viṣama, Tikṣṇa
Bhūtāgni → Manda, Viṣama, Tikṣṇa

6. Āma

Jaṭharāgnijanya
Dhātvāgnijanya
Bhūtāgnijanya

7. Srotas

8. Srotoduṣṭi Lakṣaṇa

Saṅgha
Atipravṛtti
Vimārgagamana
Sirāgranthi

9. Sañcarasthāna

Via rasāyani to a targeted organ and symptoms

10. Vyaktasthāna

Site of manifestation of clinical symptoms

11. Udbhavasthāna

Āmāśaya Samuttha

आमाशय समुत्थत्वेन आमाशयाश्रयि कफपित्तजाः सर्वे गदाः गृह्यन्ते । *C.Vi 6/3 (Cakrapāṇi)*

The diseases arises by *kapha* and *pitta duṣṭi* takes shelter in *āmaśaya* and all *kapha-pittaja vikāra* comes under this. Example–

- *Prameha*
- *Āmlapitta*
- *Pāṇḍu*
- *Rājayakṣmā*
- *Raktapitta*
- *Kāmalā* etc.

Pakvāśaya Samuttha

पक्वाशय समुत्थ ग्रहणेन सर्वे वातजाः ।
C.Vi 6/3 (Cakrapāṇi)

All *vātaja* diseases takes shelter in *pakvaśaya* and all *vātaja vikara's* are comes under this.

12. Svabhāva

Mṛdu vyādhi
Kṣipra samuttha (Aśukāri)
Dāruṇa vyādhi
Cirakāri

13. Prabhāva (Sādhyatā-asādyatā)

Curable diseases are subdivided into *sukhasādhya* (curable without difficulty) and *kṛcchra sādhya* (curable with difficulty). Incurable diseases are subdivided into two types i.e. *yāpya* (manageable) and *anupakrama* (not manageable). Again curable diseases is subdivided into three types i.e. mild therapeutics, moderate therapeutics and excellent therapeutics. This may not be possible for incurable diseases.

14. Rogamārga

- *Śākhā mārga or bāhya Roga mārga (*External path of disease*)*
- *Madhyama Roga or marmāsthi sandhi Roga mārga* (Internal path of disease)
- *Ābhyantara or koṣṭha mārga* (Internal path of the disease)

15. Rogabheda Classification of diseases

16. Adhiṣṭhana -

Site of its Manifestation

Diagnostic Importance of Saṁprāpti

Saṁprāpti helps to diagnose the contributory factors of the disease, which in turn indicates the name of the disease.

Therapeutic Importance of Saṁprāpti

Saṁprāpti helps for prescribing *saṁprāpti vighaṭana cikitsā*. It also helps to plan *saṁśodhana, saṁśamana* and *laṅghana* therapy based on morbidity of *doṣās.*

Prognostic Importance of Saṁprāpti

Involvement of all the three *doṣās, saptadhātus,* all the three *rogamārgās* indicates the poor prognosis of the disease. This can be understood by *saṁprāpti.*

न समायान्ति वैषम्यं विषमाः समतां न च ।
हेतुभिः सदृशा नित्यं जायन्ते देहधातवः ।
युक्तिमेतां पुरस्कृत्य त्रिकालां वेदनां भिषक् ।
C.Śā 1/93-94

The equilibrium state of *dhātus* is not disturbed nor the imbalanced state is brought to normalcy without some causative factors. Which determine the equilibrium or imbalance state of *dhātus.*

CHAPTER 14

Rupa

Prof. Parameswarappa S. Byadgi and Dr. Ramanand Tiwari

परिभाषा (Paribhāṣa)

प्रादुर्भूतलक्षणं पुनर्लिङ्गम् । *C.Ni 1/9*

Complete manifestation of symptoms is called *liṅga.*

व्याधेः स्वरूपं यल्लक्षणं तदपि लिङ्गं ।
C.Ni 1/9 (Gaṅgādhara)

It is the fully manifested stage of disease with prominent clinical features is called *liṅga.*

उत्पन्नव्याधेः स्वरूपं तथा वाताद्यामपक्वादि विशेषेण विशिष्टं व्याधिं निदानोपशय संप्राप्तिव्यतिरिक्तं यद् बोधयति तल्लिङ्गम् ।
C.Ni 1/9 (Cakrapāṇi)

It is the stage in which complete appearance of specific symptoms of the disease is seen. This stage indicates the *vātādi doṣās* and stages of the disease i.e. *āma* stage or *pakva* stage or advanced stage of the disease. However, this stage doesn't include *nidāna, upaśaya* and *saṁprāpti.*

अनेन च व्याधिप्रतिनियतं लिङ्गम् ।
C.Ni 1/9 (Cakrapāṇi)

Cardinal features of the disease are completely observed. For example–

1. ज्वर प्रत्यात्मिकं लिङ्गं सन्तापो देहमानसः । *C.Ci 3/31*

Cardinal signs and symptoms of the *jvara* are increased body temperature and mental unpleasureness.

2. स्पर्शोपलभ्यः परिपिण्डितत्वाद्गुल्मो । *C.Ci 5/7*

Palpaple rounded mass is called *gulma. vāta,* which is formless, remains located in the present ailment in a compact form and appears like a solid object is called *gulma.*

3. अंसपार्श्वाभितापश्च संतापः करपादयोः । ज्वरः सर्वाङ्गश्चेति लक्षणं राजयक्ष्मणः । *C.Ci 8/52*

- Burning sensation in shoulders and sides of the chest.
- Burning sensation in hands and feet
- Fever

4. कुक्षेराध्मानमाटोपः शोफः पादकरस्य च मन्दोऽग्निः श्लक्ष्णगण्डत्वं कार्श्यं चोदर लक्षणम् । *C.Ci 13/21*

- Distension of abdomen
- Gurgling noise in abdomen
- Oedema in legs and hands
- Diminished power of *agni*
- Smoothness of chin
- Emaciation are the signs and symptoms of *udara*

तदेव व्यक्ततां यातं रूपमित्यभिधीयते । *C.Ni 1/5*
तदेव व्यक्ततां पातं रूपमित्यभिधीयते । *A.H.Ni 1/5*

Clearcut appearance of symptoms is called *rūpa.*

उत्पन्नव्याधिबोधकमेव लिङ्गरूपम् ।
M.Ni 1/7 (Madhukoṣa)

It indicates the specific diseases by manifesting specific symptoms of that diseases is called *liṅga.*

तथाविधदोषदूष्य संमूर्च्छनाविशेषोज्वरादिरूपो व्याधिः तत्कार्याश्चारुच्यादयः । *M.Ni 1/7 (Madhukoṣa)*

Amalgamation of *doṣa* and *dūṣya* itself is called *vyādhi* as a result *jvarādi* diseases manifest by manifesting symptoms like anorexia, heaviness etc.

स्पष्टं पुना रूपम् । *A.S.Ni 1/9*

Definite signs and symptoms of the disease is *rupa.*

It can be classified into two kinds.

1. सामान्य रूप (General symptomatology)
2. विशेष रूप (Specific symptomatology)

1. सामान्य रूप (General symptomatology)– General signs and symptoms of the diseases are called *sāmānya rupa.*

For example :

ज्वर सामान्य लक्षण (*Jvara sāmānya lakṣaṇa*)
गुल्म सामान्य लक्षण (*Gulma sāmānya lakṣaṇa*)

2. विशेष रूप (Specific symptomatology)– Here

specific symptoms and signs of diseases observed. For example : *vātaja, pittaja jvara* symptoms etc.

रूप पर्याय (Synonyms of Rupa)

तत्र लिङ्गमाकृतिर्लक्षणं चिह्नं संस्थानं व्यञ्जनं रूपमित्यनर्थान्तरम् । *C.Ni 1/9*

संस्थानं व्यञ्जनं लिङ्गं लक्षणं चिह्नमाकृतिः ॥

A.H.Ni 1/5

Liṅga, ākṛti, lakṣaṇa, cinha, saṁsthāna, vyañjana and *rūpa* are synonyms to each other.

Liṅga– It indicates general or specific state of *doṣā's* or stage of the disease by exhibiting certain features.

I. लिङ्ग्यते प्रादुर्भूतो भावः स्वरूपतो र्ज्ञायते अनेनेति लिङ्गम् ।

C.Ni 1/9 (Gaṅgādhara)

Any morbid phenomenon experienced by the patient which is in the form of symptom indicative of disease is called *liṅga.*

II. एवम आक्रियते ज्ञायतेऽनेनेत्याकृतिः ।

C.Ni 1/9 (Gaṅgādhara)

Any manifestation of symptoms consciously experienced by the patient is called *ākṛti.*

III. लक्ष्यते ज्ञायतेऽनेनेति लक्षणं ।

C.Ni 1/9 (Gaṅgādhara)

It is an subjective evidence of disease or of patient condition experienced by the patient in the form of symptoms which designate towards disease is called *lakṣaṇa.*

IV. चिह्नते ज्ञायतेऽनेनेति चिह्नं ।

C.Ni 1/9 (Gaṅgādhara)

Which is an indication of the existence of something and it is perceptable to the examining physician is called *cinhaṁ.*

V. संस्थीयते ज्ञायतेऽनेनेति संस्थानं ।

C.Ni 1/9 (Gaṅgādhara)

It is an objective finding detected by the physician which indictes disease is called *saṁsthānaṁ.*

VI. व्यज्यते ज्ञायतेऽनेनेति व्यञ्जन ।

C.Ni 1/9 (Gaṅgādhara)

It is an manifestation of symptom that is almost universally associated with a particular disease is called *vyañjana.*

VII. रुप्यते ज्ञायतेऽनेनेति रुपम् ।

C.Ni 1/9 (Gaṅgādhara)

Appearance of noticeable change in the patient condition indicative of some bodily or mental state is called *rūpa.*

Difference Between Vyādhi and Lakṣaṇa

Vyādhi	*Lakṣaṇa*
Which gives displeasure to the body	It may manifest as a warning symptoms to protect body against invaded causative agents
It is the conglomeration of symptoms	It may appear as a single or combination of symptoms
Vyādhi pratyanika cikitsā advised during *vyakta* stage of *kriyākāla*	*Hetu liṅga cikitsā* advocated during *prasara* stage of *kriyākāla*
Lakṣaṇa's are included under *vyādhi*	Group of symptoms indicate *vyādhi*
Vyādhi sāṅkarya is condition manifest due to conglomeration of many diseases	*Liṅga sāṅkarya* is the state in which combination of symptoms observed in particular diseases. It may be single or many
It is independent	It is dependent on *vyādhi*
When a symptom itself is a disease it has its own *doṣa-dūṣya sammūrchanā*	Symptoms does not have its own *doṣa-dūṣya sammūrchanā* i.e. *jvara* in diseases like *grahaṇi, rājayakṣmā* etc.

Definition of Certain Words Used Under Rupa

तन्द्रा (Tandrā)–Stupor

इन्द्रियर्थेष्वसंप्राप्ति गौरवं जृम्भणं क्लमः ।
निद्रार्तस्येव यस्येहा तस्य तन्द्रा विनिर्दिशेत् ।

S.Śā 4/49

Sense organs become unable to receptive to their objects, feeling of heaviness in body, yawning, exhaustion, activities of the person becomes similar to that of a sleeping person, this stage is called *tandrā.*

जृम्भा (Jṛmbhā)–Yawn

पीत्वैकमनिलोच्छ्वासमुद्वेष्टन् विवृताननः।
यं मुञ्चति सनेत्रास्त्रं स जृम्भ इति संज्ञितः।
S.Śā 4/50

Swallowing of air through inspiration followed by expelling the same via mouth accompanied with tearing in eyes is known as *jhṛmbhā.*

आलस्य (Ālasya)–Lazyness

सुखस्पर्शप्रसङ्गित्वं दुःखद्वेषणलोलता।
शक्तस्य चाप्यनुत्साहः कर्मस्वालस्य मुच्यते।
S.Śā 4/52

Craving for desirable touch, displeasure to discomfort, lack of enthusiasm to do wok inspite of having energy is known as *ālasya.*

क्लम (Klama)–Exhaustion

योऽनायासः श्रमो देहे प्रवृद्धः श्वासवर्जितः।
क्लमः स इति विज्ञेय इन्द्रियार्थ प्रबाधकः।
S.Śā 4/51

Feeling of exhaustion without any physical work followed by not suffering from dyspnoea is known as *klama* and it disturbs sense perception greatly.

उत्क्लेश (Utkleśa)–Nausea

उत्क्लिश्यान्नं न निर्गच्छेत् प्रसेकष्ठीवनेरितम्।
हृदयं पीड्यते चास्य तमुत्क्लेशं विनिर्दिशेत्।
S.Śā 4/53

Consumed food trying to come out but doesn't come out inspite of stimulation, accompanied with salivation and expectoration followed by manifesting discomfort in the region of heart is known as *utkleśa.*

ग्लानि (Glāni)–Fatigue

वक्त्रे मधुरता तन्द्रा हृदयोद्वेष्टनं भ्रमः।
न चान्नमभिकाङ्क्षेत ग्लानिं तस्य विनिर्दिशेत्।
S.Śā 4/54

Sweetishness in mouth, stupor, twisting sensation in cardiac region, giddiness followed by aversion to food is known as *glāni.*

गौरव (Gaurava)–Heavyness

आर्द्रचर्मावनद्धं वा यो गात्रं मन्यर्तनरः।
तथा गुरु शिरोऽत्यर्थं गौरवं तद्विनिर्दिशेत्।
S.Śā 4/55

Person feels as if his body is covered by moist skin followed by excessive heaviness in head is called *gaurava.*

मूर्च्छा (Mūrchā)–Fainting

मूर्च्छा पित्ततमः प्रायः, रजः पित्तानिलाद् भ्रमः।
तमोवातकफात्तन्द्रा, निद्रा श्लेष्म तमोभवा।
S.Śā 4/56

- *Mūrcchā* manifest due to predominance of *pitta* and *tamoguṇa*
- *Bhrama* manifest due to predominance of *raja, pitta* and *vāta*
- *Tandrā* manifest due to predominance of *tamoguṇa, vāta* and *kapha*
- *Nidrā* manifest due to predominance of *kapha* and *tamoguṇa*

अम्लीका अम्लोद्गारः। *S.Su 21/27 (Dalhaṇa)*

Amlikā means sour erucations.

परिदाहः सर्वतो दाहः। *S.Su 21/27 (Dalhaṇa)*

Paridāha means burning sensation in entire body.

हृदयोत्क्लेद हृल्लास। *S.Su 21/27 (Dalhaṇa)*

Hṛdayotkleda means excessive salivation.

आटोपो रुजा पूर्वक उदरक्षोभः। *S.Su 21/32 (Dalhaṇa)*

Āṭopa means painful tympanitis.

ओष एकदेशिको दाहः। *S.Su 21/32 (Dalhaṇa)*

Oṣa means burning sensaton in particular area.

चोषः चूष्यत इव वेदनाविशेषः। *S.Su 21/32 (Dalhaṇa)*

Coṣa means piercing type of pain.

धूमायनं धूमोद्वमनमिव। *S.Su 21/32 (Dalhaṇa)*

Dhūmayana means emitting smoke from mouth.

अनशनम् अल्पभोजनमुपवासश्च ।
S.Su 21/19 (Dalhaṇa)

Anaśana means less intake of food or fasting.

विषमाशनं बह्वाल्पाकालभोजनम् ।
S.Su 21/19 (Dalhaṇa)

Viṣamāśana means excess intake of food or less intake of food in improper time.

अध्यशनं साजीर्ण भोजनम् । *S.Su 21/27 (Dalhaṇa)*

Adhyaśana means eating during indigestion.

शङ्कुस्फोटनवत्तस्य यस्मात्तीव्राश्च वेदनाः ।
शूलासक्तस्य लक्ष्यन्ते तस्माच्छूलमिहोच्यते ।
S.Utt 42/81

Śūla means patient feels severe pain as if nail is being pierced in.

तुद्यते प्रतोदेन व्यथ्यत इव । It means crushing type of pain. *S.Utt 43/6 (Dalhaṇa)*

तुद्यते सूच्येव । It means pricking type of pain. *M.Ni 29/3 (Madhukoṣa)*

स्फोट्यते आरयेव । It means boring type of pain. *M.Ni 29/3 (Madhukoṣa)*

पाठ्यते कुठारेणेव । It means stabbing type of pain. *M.Ni 29/3 (Madhukoṣa)*

Symptom

Any morbid phenomenon or departure from the normal function, appearance or sensation, experienced by patient indicative of disease. It is a subjective evidence of a disease.

a. Accessary symptom–any symptom not neccessarily characteristic of patient's disease.
b. Characteristic symptom–a symptom that is almost universally associated with a particular disease or condition.
c. Cardinal–a symptom that is primary significance.
d. Concomittant–a symptom not essential to a disease, but which may have an accessary value in its diagnosis.
e. Constitutional–a symptom which is indicative of or due to disorder of the whole body.

Sign

1. An indication of the existence of something; any objective evidence of a disease, i.e. such evidence as is perceptable to the examining physician.
2. Any abnormality indicative of disease, discoverable by the physician at his examination of the patient, a sign is an objective symptom of disease.
3. Some signs are deliberately elicited by means of tests for diagnostic purposes

Symptomatology–The group of symptom of disease. The study of the symptoms of disease, their causes & information they furnish.

Syndrome (Running together)– The aggregate of signs and symptoms associated with any morbid process and constituting together the picture of the disease.

Diagnostic Importance of Rūpa

a) *Rupa* helps for diagnosis of diseases directly, for example excessive watery stool is the cardinal feature of *atisāra*.

b) It also helps to know about the involvement of *doṣās* based on their presentations like pain along with roughness indicates *vāta,* burning sensation pin points *pitta* etc.

c) It also indicates the site of manifestation of diseases i.e. *sandhivāta* etc.

Therapeutic Importance of Rūpa

Rupa stage helps for planning *vyādhi pratyanika cikitsā.*

Prognostic Importance of *Rūpa*

Mild *rūpa* signifies curability and complete manifestation of *rūpa* indicates difficult for management or disease may become incurable.

CHAPTER

15

Vyadhinamakarana & Namaste Portal

Prof. Parameswarappa S. Byadgi and Dr. Arunima P.S.

Method of nomenclature adopted by our *Ācāryas* was described in the texts and it was done based on etiology, symptomatology, organ involvement, resemblance, mythology, colour, nature of the disease, pain, shape etc.

त एवापरिसंख्येया भिद्यमाना भवन्ति हि।
रुजावर्णसमुत्थानस्थानसंस्थाननामभिः ॥
C.Su 18/42

विकाराः पुनप्रिसंख्येयाः, प्रकृत्यधिष्ठानलिङ्गयतनविकल्प विशेषापरिसंख्येयत्वात् ॥ *C.Su 20/3*

For the nomenclature of the diseases certain criteria's are mentioned in the texts even though diseases are innumerable in number.

Based on *Prakṛtī* (nature of the disease), *adhiṣṭāna* or *saṃsthāna* (origin of the disease/site of manifestation), *lakṣaṇa* (signs and symptoms), *samūtthāna* or *hetu* (etiological factors), *varṇa* (colour), *rūja* (pain), *sadṛśya* (simulation), *ākṛtī* (size) etc.

Based on Prakṛtī (Nature of the Diseases)

Nomenclature of disease was done based on the nature of contributory factors involved in the manifestation of the disease.

On the basis of predominance of *Vāta* :

Ex.
- *Vāta ratka,*
- *Vāta kaṇṭaka*
- *Pakṣāgāta*
- *Gṛdrasī*
- *Apabāhūka*
- *Ardīta* etc.

On the basis of predominance of *Pitta :*

Ex.
- *Pittaja Jvara*
- *Pittaja grahanīroga*
- *Pittaja Arśa, Pittaja Apasmāra* etc.

On the basis of predominance of *Kapha* :

Ex.
- *Dhamanī praticaya*
- *Sthaūlya*
- *Granthi*
- *Kaphaja Unmāda*
- *Kaphaja Arśa* etc.

2. **Nomenclature of disease was done based on the *Sthāna* or site of manifestation**
   - *Grahaṇī Doṣa*
   - *Mānyastamba*
   - *Hṛdroga*
   - *Urūsthambha*
   - *Carmakilā*
   - *Hanugraha*
   - *Śirahśūla*
3. **Nomenclature of disease was done based on the *Lakṣaṇa/Liṅga* or Clinical Features**

Jvara, Āmlapitta, Raktapitta, Prameha, Atisāra, Chardi, Śvāsaroga, Kāśaroga etc.

- *Atisāra*

  गुदेन बहुद्रवसरणमतिसार

  It means the elimination of watery stools through anal canal in large quantity.

- *Chardi*

  छादयति मुखम् अर्दयति चाङ्गनीति छर्दि :

  Elimination of substances through mouth in large quantity and which causes discomfort to body.

- *Kāśa*

  "कासनं कास इति वा, भिन्नस्वरः कासति शुष्कमेव"

  One which makes the sound like that of broken conch is termed as *Kāśa*.

- *Hikkā*

  "हिगिंति कृत्वा कायति शब्दायते इति हिक्का"

  One which makes the hic sound is termed as *Hikkā*.

- *Alasaka*

  आमाशयेऽलसीभूतस्तेन् सोऽलसकः स्मृतः

  The food remains in stomach which moves neither upwards nor downwards.

- *Mūtrakṛchra*

  मूत्रस्य कृच्छेण महता दुःखेन प्रवृत्तिःमूत्रकृच्छम ।

  One who passes urine with great difficulty is known as *Mūtrakṛchra*.

4. Nomenclature of disease was done based on the Samutthana or cause of the particular disease

- *Kṛmīja Hṛdroga* develops due to *kṛmī*
- *Sāhasajanya Rājayakṣmā* is caused due to excessive physical exertion or *Sāhasa.*
- *Madhyaja tṛṣṇā* caused due to excessive and improper intake of *madhya.*
- *Mṛttikājanya Pāṇḍūroga* develops due to *mṛd bhakṣaṇa* (mud eating).
- *Kalāya khañja* develops due to excess intake of peanut
- *Bhūtonāmāda* develops due to entry of evilspirit

5. Nomenclature of disease was done based on the *Varṇa* (colour)

- *Harīdrā Meha* • *Mañjīṣṭhā meha*
- *Pāṇḍūroga*

6. Nomenclature of disease was done based on the *Rūja* or Pain

- *Arśa*...... अरिवत् प्राणान् शृणाति हिनस्तीत्यर्थः

  Patient experiences severe discomfort to body and mind as if like torture by enemies.

- *Śūla*...... शङ्कुस्फोटनवत्तस्य यस्मात्तीव्रा हि वेदना ।

  Patient experiences severe pain as if being pierced by a cone or exploding nature.

- *Visūcikā.*..... सूचीभिरैव गात्राणि भिन्नत्तीति विसूचिका

  Pricking type of pain experienced all over abdomen.

7. Nomenclature of disease was done based on the *Sadrsa* (Simulation)

- *Mañjīṣṭhā Meha*-color of urine resembles to the colour of *Mañjīṣṭhā.*
- *Kroṣṭuka śīrṣa*..... क्रोष्टुकशीर्षवत शृगालमस्तकवत् स्थूलः

The part of affected limb resembles similar to head of the fox.

- *Gṛdhrasī*..... गृधवत चलति इति गृधसी

  The gait of the affected person resembles to the gait of the vulture.

Gūlma, Valmīka, Dhanūsthambha, Kūmbhakāmalā etc.

8. Nomenclature of disease was done based on the *Ākṛti* or Shape

Ex. ***Masūrikā***...... मसूरिकाकृति संतानाः पिडकाः स्युः मसूरिकाः

Shape of the pustule will be like a lentil.

- *Dhanu sthambha.*..... धनुतस्तुल्यं नमेद्यस्तु स धनुः स्तम्भसंज्कः

  Body will bend like a bow in *Dhanusthambha.*

9. *Samprāpti sucaka* (indicating pathogenesis) The nomenclature of the disease based on the pathogenesis eg. *Raktapitta, Āmlapitta, Āmavāta, Vātarakta* etc.

10.*Prabhāva sucaka* (impact on body) : The nomenclature of the disease based on the effect of the disease Eg. *Kuṣṭha, Visarpa, Dārunaka, Halimaka* etc.

11. *Paūrāṇika* (Mythological stories)

The nomenclature of the disease based on the mythology for eg. *Rājayakṣmā, Skandāpasmāra, Brahmarakṣasāgraha* (*Bālagrahās*) etc.

8. Rūḍhanama (tradition)

The nomenclature of the disease based on the tradition For eg. *Cippa Gṛdhrasī, Urūsthambha* etc.

Operate NAMASTE (National AYUSH Morbidity and Standardized Terminologies Electronic Portal) portal

Standardization of terminologies and diagnostic classifications helps to promote academic development and propagation of achievement, to standardize management, guarantee the quality and safety of medicine/treatment procedures, aids to promote the modernization and international communication to achieve good economic and social benefits. This aids to achieve guiding and supporting a series of activities for the purpose of the comprehensive development of traditional medicine

- NAMASTE portal launched on 17th October, 2017 (2nd Ayurveda day).

Vision

- Comprehensive web-portal for Standardized Terminologies and National Morbidity Codes of Ayurveda, Siddha and Unani Systems of Medicine and WHO-ICD-10 and ICD-11.

Mission

- Pan India implementation of ASU National Morbidity Codes for reporting morbidity and treatment outcome along with ICD-10/11 (DUAL CODING System).
- Pan India Implementation of ICD-10/11 Disease Codes for Yoga, Naturopathy and Homoeopathy Systems of Medicine for reporting morbidity and treatment outcome.
- Serve as reference repository of A-S-U terminologies and Morbidity Codes for further development of A-S-U international terminologies and ICD-11 morbidity Codes.
- The portal provides standardized terminologies & morbidity codes for Ayurveda, Siddha and Unani systems of medicines.
- Morbidity codes provide a comprehensive classification of diseases described in the traditional medicines system.

Benefits of standardized terminologies and encodable morbidity entities

- Enables counting of traditional medicine health services and encounters and measure their form, frequency, effectiveness, safety, quality, outcomes, and cost internationally
- It helps make a strong case for inclusion of Ayush interventions in National Health Programmes, facilitates international comparability of practice, research and reporting of morbidity in this part of traditional medicine.
- Availability of these terminologies in electronic format enable- Digitization of Traditional Medicine (TM) diagnoses data with facilitated integration into Electronic Health Record (E.H.R) systems and utilization of powerful terminology portals such as Systemized Nomenclature of Medicine – Clinical Terms (SNOMED-CT), Logical Observation Identifiers Names and Codes (LOINC)., and interoperable standards such as Health Level Seven International-HL-7.
- Joint use of ICD-11 TM Chapter and other International Classification of Diseases-ICD-11 Chapter (e.g. Neoplasm, Patient Safety, Injuries) can enhance adverse-event reporting and enable integration of TM into insurance coverage and reimbursement systems, in line with larger WHO objectives relating to universal health coverage and link TM practices with global conventional medicine norms and standard development.

Benefits of NAMASTE Portal

- Real time morbidity data collection.
- Identification of areas of strengths of the various systems under Ayush.
- Brings to light, the volume of services provided by Ayush systems which can help in future policy decision making.
- The diagnostic guidelines provided along with the disease would serve as a helping tool in diagnosis and enable cross verification of diagnosis with the case records.
- Helpful in regulating the healthcare delivery system in Ayush systems by providing standardizing diagnostic terminologies, thus overcoming the barrier of the diagnosis being written in Sanskrit-Arabic-Tamil languages in case of Ayurveda, Siddha, Unani systems.
- The diagnostic codes can serve as a tool for documentation in various other programmes such as outreach activities.
- This is the first ever initiative taken by the Ministry of AYUSH, Govt. of India as steppingstone for sustainable maintenance of Ayush health statistics across the country by adopting uniform terminologies. Furthermore, unique code based AYUSH terminologies would certainly bring an uniform pattern of indicating disease terminologies for academic,

research as well as serving the purpose of clinical practice. The ultimate transformation would be uniform presentation of evidence in the country and the world at large. The development and maintenance of this portal would be an important milestone for reporting the contribution of Ayush system of medicines in the health care system of the country.

Key Features

- Single window dashboard for Standardized terminologies and national morbidity codes for Ayurveda, Siddha, Unani (and for Sowa Rigpa in due course of time)
- Open access to browse and utilize the contents for all stakeholders viz., Ayush students, medical practitioners, medical record & coding personnel, hospital administrators, public health experts, policy makers etc.,
- An Intuitive user-friendly data entry module for submission of aggregate statistics on monthly basis.
- Comprehensive Data Visualization module to view, time-series, periodical aggregate data and trends like viewing top 10 disorders etc.,
- A data networking platform connecting Ayush systems of medicine with Central Bureau of Health Intelligence, National Health Mission, National Ayush Health Mission and other key health care related portals in India.

Utility of NAMASTE Portal

- Code based reporting of Morbidity and Reason for encounter based on the services provided by Ayush systems across India.
- Futuristic double coding system for reporting using both Ayurveda, Siddha, Unani National Morbidity Codes and ICD-10/11.
- Single coding system employing ICD-10/11 for Homoeopathy, Yoga & Naturopathy system of medicine may report by single coding system by ICD – 10/11.
- A repository of information for differential diagnosis, research, Insurance coverage.
- Serves as information repository for further development of W.H.O International Terminologies of Ayurveda, Siddha, Unani & ICD-11, Chapter-26, Module 2.

Development of Ayurveda, Siddha and Unani Morbidity Codes

The ontology framework and classification strategy adopted for Ayurveda/Siddha/Unani Morbidity Codes in NAMASTE Portal is as follows :

1. Diagnostic term/entity is described in Ayurveda/Siddha/Unani classical texts with description of signs/symptoms.
2. Diagnostic term/entity is employed by Ayurveda physicians in day to day practice at some or other level of understanding pathology and arriving at final diagnosis.

- At dosha/dhatu/mala level indicating involvement or impending development of another condition further aiding in deciding upon treatment, prognosis.
- At affected end organ level based on anatomy e.g, diseases of nose/throat etc.,
- Based on causative factor e.g. poisoning/ treatment complications/lifestyle related health issues etc.
- Based on epidemiology w.r.t. conditions such as worm infestation or other infections
- Codes describing characteristics of people in terms of constitution, state of health, pregnancy, stages of aging etc.

Codes describing treatment outcome essential for stopping treatment and take the course of action to next logical state.

CHAPTER

16

Vyadhi

व्याधि का परिभाषा (Vyādhi Ka Paribhaṣā)

तच्च दुःख संयोगो व्याधय उच्यते । *(S.Su 1/23)*

Manifestation of discomfort to the body is called *Vyādhi*.

दुःख कायवाक् मनसी पीडा । *S.Su 1/23 (Dalhaṇa)*

Dukha may pertain to body, speech and mind. *Vyādhi* is defined as the conjunction of living being with pain.

तथाविध दोषदूष्य सम्मूर्च्छना विशेषो ।
ज्वरादि रूपो व्याधिः तत्कार्याश्चारुच्यादयः ॥
M.Ni. 1/7 (Madhukoṣa)

Vyādhi manifests due to *doṣa-duṣya sammūrchana* as a result *jvarādi* diseases are going to manifest inside the body by producing symptoms like anorexia, temperature etc.

Classification of Vyādhi

Caraka classified the *vyādhi* into different categories. He also suggested that newer classification group may be made if any. Diseases are only one because pain is the common manifestation in all types of diseases. Individuals are free to classify th disease as they like. If something has been already described in any group, the same may be reclassified and regrouped by giving different justification. Sometimes the same term may carry different meanings, for example the word 'roga' denotes disease as well as doṣa.

व्याधि पर्याय (Synonyms of Vyādhi)

रोगः पाप्मा ज्वरो व्याधिर्विकारो दुःखमामयः।
यक्ष्मातङ्कगदाबाधाः शब्दाः पर्यायवाचिनः ॥
A.Hr.Ni 1/1

तत्र व्याधिरामयो गद आतङ्को यक्ष्मा ज्वरो विकारो रोग इत्यनर्थान्तरम् ॥ C.Ni 1/5

Vyādhi, āmaya, gada, ātaṅka, yakṣmā, jvara, vikāra and roga are the synonyms of *vyādhi*.

समानो हि रोगशब्दो दोषेपु च व्याधिपु च; दोषा ह्यपि रोगशब्दमातङ्कशब्दं यक्ष्मशब्दं दोषप्रकृतिशब्दं विकारशब्दं च लभन्ते, व्याधयश्च रोगशब्दमातङ्कशब्दं यक्ष्मशब्दं दोषप्रकृतिशब्दं विकारशब्दं च लभन्ते। तत्र दोषेपु चैव व्याधिपु च रोगशब्दः समानः, शेषेपु तु विशेषवान्। C.Vi 6/4

The same term may carry different meanings, e.g. the word roga denotes both the *doṣa* as well as diseases. Similarly various terms which are synonymous may denote only one thing, e.g. roga, *ātaṅka, yakṣmā, doṣaprakṛti* (having polluting nature) and *vikāra* (morbidity–these terms carry the meaning of or synonymous with both doṣa and *vyādhi* (disease). Thus the term roga is synonymous with both the *doṣa* and *vyādhi* (disease). For the rest like hetu (etiology) etc., this term, viz. *roga* carries a different meaning.

1. Vyādhi

तथा च विविधं दुःखमादधातीति व्याधिः ।
Cakrapāṇi

Which produces various kinds of discomfort and unhappiness to both mind and body is called vyādhi.

2. Āmaya

प्रायेणामसमुत्थत्वेनामय उच्यते । *Cakrapāṇi*

Most of the diseases may arise due to *āma* that's why it is called *āmaya*.

3. Ātaṅka

आतङ्क इति दुःखयुक्तत्वेन कृच्छ्रजीवनं करोति ।
Cakrapāṇi

Individual suffering from disease with pain leads displeasure life is called *ātaṅka*.

4. Yakṣmā

यक्ष्मशब्देन च राजयक्ष्मवदनेकरोग युक्तत्वं विकाराणां दर्शयति । *Cakrapāṇi*

Like *Rājayakṣmā* conglomeration of diseases arises in some diseases.

5. Jvara

ज्वरशब्देन च देहमनः सन्ताप करत्वम् । *Cakrapāṇi*

Which induces warmness to both body and mind is called *Jvara.*

6. Vikāra

विकार शब्देन च शरीरमनसोरन्यथाकरणत्वं व्याधेर्दर्शयति । *Cakrapāṇi*

Changes effected by the diseases, both in body as well as mind.

7. Roga

रोगशब्देन च रुजाकर्तृत्वम् । *Cakrapāṇi*

Which gives pain to body is called *roga.*

8. Pāpma

पाप्मेति किल सर्वे रोगाः पापस्य कर्मणः फलमिति कृत्वा पाप्मेत्युच्यते । *Sarvāṅgasundara*

All the diseases manifest due to sinful acts done by the individual is called *pāpmā.*

9. Gada

गद इव गदोऽनेककारणजन्यत्वात् । यथा हि गदोऽनेककारणजस्तथा गदोऽपीति गदशब्दस्यार्थः । *Sarvāṅgasundara*

Poison manifests by combination of many factors in the same way *vyādhi* manifests due to various factors. Disturbed *doṣa, duṣya, agni* etc. produces hazardous effects like poison, that's why it is called *gada* (*Gada* means poison).

10. Ābādha

आबाध इति आसमन्तात् कायमनसोर्बाधनं पीडेत्यर्थः ।
Sarvāṅgasundara

During disease state person will be afflicted with various kinds of pain to both body and mind as a result normally these will have an impact on the functions of both body and mind resulting in abnormal activities.

तत्र व्याधयोऽपरिसंख्येया भवन्ति, अतिबहुत्वात् ।
C.Vi 6/5

Diseases are innumerable based on their multifactorial nature.

One type of Vyādhi

A. दुःख सामान्यात् । *C.Vi 6/03*

Discomfort is common in all types of *Vyādhi.*

C. रुक् सामान्यत् । *C.Su 20/03*

Pain is common manifestation in all varieties of *Vyādhi.*

Two types of diseases

A. *Prabhāva bheda*
  - *Sādhya*
  - *Asādhya*

B. *Bala bheda*
  - *Mṛdu*
  - *Dāruṇa*

C. *Adhiṣṭhāna bheda*
  - *Śārirādhiṣṭhāna*
  - *Manoadhiṣṭhāna*

D. *Kriyā bheda*
  - *Śastra sādhya*
  - *Śnehādi kriyā śādhyaścha (S.Su 24/3)*

E. *Nimitta bheda*
  - *Svadhātu vaiṣamya nimittaja*
  - *Āgantu nimittaja*

F. *Aśaya bheda*
  - *Āmāśaya samutha*
  - *Pakvāśaya samuttha*

G. *Svatantrādi bheda*
  - *Svatantra (pūrva-rupa)*
  - *Paratantra (upadrava)*

Three Types of Diseases

Kāraṇa bheda–

1. A. *Nija*
   B. *Āgantu* *C.Su 11/45*
   C. *Mānasa*
2. A. *Dṛṣṭa karmaja*
   B. *Adṛṣṭa karmaja* *A.Hr.Su 12/57*
   C. *Dṛṣṭādṛṣṭa karmaja*

Mārga bheda–

A. *Bāhya (Śākhāśrita roga mārga)*
A.S.Su 22/9 B. *Madhyama (Marmāsthi sandhigata roga)*
C. *Abhyantara (Koṣṭhāśrita) Doṣa bheda*

A. *Āgneya (Pitta)*
C.Ni 1/4 B. *Saumya (Kapha)*
C. *Vāyavya (vāta)*

Ādhyātmikādi bheda–

तच्च दुःखं त्रिविधम् आध्यात्मिकम्, आधिभौतिकम्, आधिदैविक-मिति ॥ *S.Su 24/4*

A. *Ādhyatmika*
B. *Ādi daivika*
C. *Ādi bhautika*

Karma bheda–

A. *Pratyutpanna karmaja*
A.S.Su 22/1-2 B. *Pūrva karmaja*
C. *Ubhayātmaka*

Karma bheda

A. *Pūrvakarmaja*
A.S.Su 22/1-2 B. *Pratyutpanna karmaja*
C. *Parābhi saṁskāraja*

Karma bheda

A. *Doṣaja*
A.H.Su 12/58 B. *Karmaja*
C. *Doṣa karmaja*

Aupasargikādi bheda

A. *Aupasargika*
A.Su 35/18 B. *Prakkevala*
C. *Anya lakṣaṇa*

Four Types of Roga's

i) *Āgantuja roga*
ii) *Śāriraja roga*
iii) *Mānasa roga* *S.Su. 1/22*
iv) *Svabhāvik roga*
i) *Sukha sādhya roga*
ii) *Kṛcchra sādhya roga* *C.Su 10/9-10*
iii) *Yāpya roga*
iv) *Anupakrama (pratyākhyeya) roga*

Five Types of Roga

i) *Vātaja vikāra*
ii) *Pittaja vikāra*
iii) *Kaphaja vikāra* *S.Su 1/02*
iv) *Śonitaja vikāra*
v) *Sannipātaja vikāra*

Seven Varieties of Diseases

तत्तु सप्तविधे व्याधावुपनिपतति । ते पुनः सप्तविधा व्याधयः तद्यथा-आदिबलप्रवृत्ताः, जन्मबलप्रवृत्ताः, दोषबलप्रवृत्ताः, सङ्घातबलप्रवृत्ताः, कालबलप्रवृत्ताः, दैवबलप्रवृत्ताः, स्वभावबलप्रवृत्ता इति ॥ *S.Su 24/4*

i) *Ādi bala pravṛtta vyādhi*
ii) *Janma bala pravṛtta vyādhi*
iii) *Doṣa bala pravṛtta vyādhi*
iv) *Kāla bala pravṛtta vyādhi*
v) *Daiva bala pravṛtta vyādhi*
vi) *Svabhāva bala pravṛtta vyādhi*
vii) *Saṅghāta bala pravṛtta vyādhi*

Seven Varieties of Vyādhi

i) *Sahaja roga*
ii) *Garbhaja roga*
iii) *Jātaja roga*
iv) *Piḍaja roga* *A.S.Su 22/1-2*
v) *Kālaja roga*
vi) *Prabhāvaja roga*
vii) *Svabhāvaja roga*

ते च रोगाः स्वप्रधाना च भवन्त्यन्यपरिवारा वा क्रमादनुबन्ध्यनुबन्धाख्याः । तत्राऽद्याः स्वतन्त्राः स्पष्टाकृतयो यथास्वं समुत्थानोपशयाश्च । इतरे तु तद्विपरीताः तद्वच्च दोषाऽपि तत्रान्यपरिवारा व्याधयो द्विविधाः । पुरोगामिनोनुगामिनश्च । तेष्वाद्याः पूर्वरूप संज्ञाः । उपद्रवास्त्वितरे । तान्यथायथमेव वक्ष्यमाणानुपलक्षयेत् । *A.S.Su 22/10*

Diseases may manifest independently or as a secondary to other disease known respectively as *anubandhya* (primary) and *anubandha* (secondary). *Anubandhya* is independent and has specific well defined features, causes and diagnosis. *Anubandha* is dependent and doesn't have its own clinical features, causes and diagnosis, which is divided into two namely *purogāmi* or *pūrvarupa* and *anugāmi* or *upadrava*.

त्रयो रोगा इति निजागन्तु मानसाः । तत्र निजः शारीरदोषसमुत्थः, आगन्तुर्भूतविष वाय्वग्निसंप्रहारादि समुत्थः, मानसः पुनरिष्टस्य लाभाल्लाभानिष्टस्योपजायते । *C.Su 11/45*

Mainly diseases manifest due to three regions namely endogenous (*nija*), exogenous (*āgantuja*) and psychological (*mānasa*). *Nija* diseases are those which arise due to disturbed *vātādi doṣa*, *āgantu vikārā's* manifest due to effect of devil, poisons, air, fire and fight. *Mānasa* diseases arises due to association with the agreeable and nonagreeable things.

Three Varieties of Diseases

I आध्यात्मिक व्याधि (Ādhyātmika Vyādhi)

वातपित्त कफोत्थाः शरीरभवा आध्यात्मिकाः । तथा रजस्तमोभवाश्च, आत्म व्याधी आध्यात्मं तत्र भवमाध्यत्मिकम् ।
S.Su 24/4 (Dalhaṇa)

Ādhyātmika means diseases manifesting due to involvement of *vāta, pitta* and *kapha doṣa* along with *raja* and *tamo mānasa doṣa*. It means relating to self or one's own soul.

एते आध्यात्मिका इति एते आदिबल प्रवृत्ता जन्मबल प्रवृत्ता दोषबल प्रवृत्तास्त्रयः । *S.Su 24/05 (Dalhaṇa)*

Ādibala pravṛtta, janmabala pravṛtta and *doṣabala pravṛtta vyādhi* comes under *ādhyātmika.*

आध्यात्मिकाः शरीरस्यवातादि रजः प्रभृति दोष जनितत्वात् ।
S.Su 24/5 (Dalhaṇa)

Diseases manifest by involving *vātādi śāririka doṣa* along with *raja* and *tamodoṣa.*

a) दोषबल प्रवृत्त व्याधयः (Doṣa Bala Pravṛtta Vyādhayaḥ)

दोष बल प्रवृत्ता ये आतङ्कसमुत्पन्ना मिथ्याहाराचारकृताश्च; तेऽपिद्विधाः आमाशय समुत्थाः पक्वाशय समुत्थाश्चः, पुनश्च द्विविधाः शरीरा मानसाश्च । *S.Su 24/5*

Doṣa bala pravṛtta vyādhi's are those manifest due to disturbed *śāririka* and *mānasa dosa.* For the genesis of *doṣa bala pravṛtta vyādhi's* causative factors are incompatible dietetic and erratic activities. It is sub-divided into *āmāśaya samuttha* and *pakvāśaya samuttha.* Again subdivided into *śāririka* and *mānasika.*

आतङ्का रोगाः, यथा प्रतिश्यायात् कासः कासात् क्षय इत्यादि ।
S.Su 24/5 (Dalhaṇa)

The word *ātaṅka* means roga, which gives displeasure to the body and create uncomfortness to the individuals. For example–

Pratiśyāya manifests *kāsa.*

Kāsa manifests *kṣaya* etc.

मिथ्याहार (Mithyāhāra)

मिथ्याहार विहारिणामिति मिथ्या अनुचितः ।
S.Ni 1/4 (Dalhaṇa)

Improper and incompatible adaptation of dietetics is called *mithyāhāra.*

आहारस्य मिथ्यत्वं प्रकृत्याद नामाहारोप योग हेतूनां विरूद्धत्वेनोपयोगः । *M.Ni 2/2 (Madhukoṣa)*

One who doesn't follow the rules and regulations of *aṣṭavidha āhāra viśeṣāyatana's* (8 fold dietetic regulations) properly is called *mithyāhāra,* excluding *rāśi.*

मिथ्याचार (*Mithyācāra*)

.......विहारिणामिति मिथ्याअनुचितः । *S.Ni 1/41*

Improper erratic behaviour is called *mithyācāra.*

विहारः कायवाङ्मनो व्यापारः । *S.Ni 1/40-41*

Improper and contrary activities related to physical, speech and mind are called *mithyācāra.*

विहारस्य मिथ्यत्वमयथाबलमारम्भादि ।
M.Ni 2/2 (Madhukoṣa)

साहसं कायेन वाचा वाऽयथाबलमारम्भः ।
A.Hr.Ni 5/4 (Sarvāṅgasundara)

Incorrect, improper, wrongly behaviour of the individual in respect to physical, speech and mind. For example–

Weak person fighting against strong person.

Speaking too much, excessive worries etc.

आमाशय समुत्थ (Āmāśaya Samuttha)

आमाशय समुत्थत्वेन आमाशयाश्रयि कफपित्तजाः सर्वे गदाः गृह्यन्ते । *C.Vi 6/3 (Cakrapāṇi)*

The diseases arises by *kapha* and *pitta duṣṭi* takes shelter in *āmaśaya* and all *kapha-pittaja vikāra* comes under this. Example–

- *Prameha*
- *Āmlapitta*
- *Pāṇḍu*
- *Rājayakṣmā*
- *Raktapitta*
- *Kāmalā* etc.

पक्वाशय समुत्थ (Pakvāśaya Samuttha)

पक्वाशय समुत्थ ग्रहणेन सर्वे वातजाः ।

C.Vi 6/3 (Cakrapāṇi)

All *vātaja* diseases takes shelter in *pakvaśaya* and all *vātaja vikara's* are comes under this.

शरीर (Śarira)

वातपित्त श्लेष्माणास्तु खलु शरीर दोषाः । तेषामपि च विकाराज्वरातिसार शोफ शोष श्वास मेह कुष्ठादयः । *C.Vi. 6/5*

Vāta, pitta and *kapha* are three *śārira doṣa.* Diseases manifest due to *vātādi doṣa* like *jvara, atisāra, śopha, śoṣa, śvasa, meha, kuṣṭha* etc. come under *śarira roga.*

- 80 types of *vātaja nānātmaja vikara*
- 40 ’’ ’’ *pittaja* ’’ ’’
- 20 ’’ ’’ *kaphaja* ’’ ’’
- 10 ’’ ’’ *raktaja* ’’ ’’

A.S.Su 20/12
S.Pratham khanḍa 7/125-127)

Totally 1120 diseases manifest because of abnormal *doṣas (S.Su 24/8 Dalhaṇa)*

मानस (Mānasa)

रजस्तमश्च मानसौ दोषौ तयोर्विकाराः काम क्रोध लोभ मोहेर्ष्यामानमद शोक चित्तोद्वेग भय हर्षादयः । *C.Vi. 6/5*

Raja and *tama* are two *mānasika doṣa* and diseases manifest due to their abnormality are comes under *mānasa vikāra.*

Examples :

Kāma (passion) *Krodha* (anger)
Lobha (greed) *Moha* (confusion)
Irṣyā (envy) *Māna* (conceit)
Mada (narcosis) *Śoka* (anxiety)
Cittodvega (excitement) *Bhaya* (fear)
Harṣa (exhilaration)

उभय (Ubhaya)

तत्र मनोऽधिष्ठानाः क्रोधादयः शरीराधिष्ठाना ज्वरादयः, उभयादिष्ठाना अपस्मारादयः । *S.Su 1/26 (Dalhaṇa)*

Krodhādi vikārās are those manifest due to morbidity in *manas* and *jvarādi rogās* manifest due to affliction of *vātādi doṣa* and *apasmārādi roga's* manifest by afflicting both *śāririka* and *mānasika doṣa.*

Importance of Vātādi Doṣa in the Manifestation of Diseases

सर्वेषां च व्याधिनां वातपित्तश्लेष्माण एव मूलं ।

S.Su 24/8

Vāta, pitta and *kapha* are the main root or the base for the initiation of all pathogenetic events, because of having their symptoms, their subsidance and *scriptural* evidence. As the entire creation existing as universe is never distinct from *satva, rajas* and *tamas,* the entire group of disorders present in different forms does not exist without *vāta, pitta* and *kapha.*

Variations are due to combination of *doṣa, dhātu* and *mala;* specific sites and etiological factors; to *dhātu,* vitiated excessively by *doṣa,* nomenclature is given like *rasaja, raktaja* etc.

शरीरस्त्वन्नपानमूला वातपित्त कफ शोणित सन्निपात वैषम्या निमित्ताः । *S.Su 1/24 (02)*

Improper usage of foods and drinks manifests *vātaja, pittaja, kaphaja, śoṇitaja* and *sannipātaja vyādhi.*

दोषा एव हि सर्व रोगैककारणम् । *A.S.Su 22/10*
सर्वेषां रोगाणां वातादय एव दोषा एकमेव कारणम् ।
न हि दोषेण विनात्कचिदपि रोगा दृश्यन्ते ।

A.S.Su 22/10 (Indu)

Doṣās are the main factors in the development of disease process. Without the involvement of *vātādi doṣa* diseases won't manifest.

सर्व शरीर चरास्तु वातपित्तश्लेष्माणः ।
सर्वास्मिच्छरीरे कुपिताकुपिताः शुभाशुभानि कुर्वन्ति ।
प्रकृतिभूताः शुभान्युपचय बल वर्ण प्रसादादीनि ।
अशुभानि पुनर्विकृति मापन्ना विकार संज्ञकानि ।

C.Su. 20/9

Vāta, pitta, kapha spreaded all over the body and manifest good or bad consequences in the entire body when during normalcy or aggravation. Equilibrium state of *doṣa* manifests good consequences like development, strength, complexion, cheerfulness etc. During their abnormal state manifest diseases.

दोषाः पुनस्त्रयो वातपित्तश्लेष्माणः ते प्रकृतिभूताः शरीरोपकारका भवन्ति, विकृतिमापन्नास्तु खलु नानाविधैर्विकारैः शरीरमुपतापयन्ति । *C.Vi. 1/5*

Vāta, pitta and *kapha* are three *śāririka doṣa* and perform all normal physiological functions of the body during their normalcy and becomes non conducive during their disequilibrium state.

संसर्गज विकार (Saṁsargaja Vikāra)

Diseases may manifest by involving two or more *doṣa* is called *saṁsargaja*. *Doṣa* may unite with *dhātu, mala* etc. and manifest various diseases and accordingly nomenclature was given.

For Example–

Vātādi doṣa + Rasadhātu → Jvara

Vātādi doṣa + Rasadhātu + Puriṣa → Atisāra

Vātādi doṣa + Rasādi duṣya + Mūtra → 20 types of *Prameha*

Vātādi doṣa + Raktadhātu → Vātarakta, Raktapitta, Vidradhi, Rakta Gulma

S.Su. 24/8 (Dalhaṇa)

b) जन्मबल प्रवृत्त व्याधि (Janma Bala Pravṛtta Vyādhi)

जन्मबल प्रवृत्ता मातुरपचारात् पङ्गुजात्यन्ध बधिरमूक-मिन्मिनवामन प्रभृतयो जायन्ते तेऽपि द्विविधाः रसकृताः दौहृदापचार कृताश्च । *S.Su 24/5*

Janmabala pravṛtta disease occur due to unwholesome behaviour of the mother during conception and pregnancy. As a result the following diseases manifest namely lameness, blindness, deafness, muteness, nasal voice, dwarfness etc. by birth. This is again subdivided into two kinds i.e.

i) *Rasa kṛta*–due to *rasa*

ii) *Dauhṛdāpacāraja*–non fulfillment of longings during pregnancy

जन्मबल प्रवृत्ता इति शुक्र शोणित दुष्टिं विनाऽपि मातुरपचारबलाजाताः । *S.Su 24/5 (Dalhaṇa)*

Janmabala pravṛtta vyādhi's are those manifest without the affliction of *śukra śoṇita* but results due to improper conduct and dietetics.

अपचार इति दुष्टाहाराचारवपचारः । *S.Su 24/5 (Dalhaṇa)*

Consumption of improper diet during conception and pregnancy along with erratic behaviour leads to manifestation of *janmbala pravṛtta vyādhi*.

दौहृदापचारकृताश्चेति गर्भानुभावान्मातुश्चतुर्थादि मासेष्विन्द्रियार्थ प्रार्थना दौहृदम् इत्याचक्षते तस्यापचारस्तु दौहृदमेवापमानितम् अपमानित मलब्धं गर्भस्याहितं वा । *S.Su 24/5 (Dalhaṇa)*

Dauhṛdā means performing prayer for the pleasure of senses from the date of conception to till the 4th month of pregnancy. Any misbehave during this period leads to *janmabala pravṛtta vyādhi*.

c) आदिबल प्रवृत्त व्याधि (Ādibala Pravṛtta Vyādhi)

तत्र, आदिबल प्रवृत्ता ये शुक्रशोणित दोषान्वयाः कुष्ठार्श प्रभृतयः; तेऽपि द्विविधाः मातृजाः, पितृजाश्च । *(S.Su 24/5*

Ādibala pravṛtta diseases are those manifest due to morbidity of *śukra* and *śoṇita*. For example *kuṣṭha, arśa* etc. It is subdivided into two varieties namely *mātṛjā* and *pitṛjā*.

शुक्रशोणित दोषान्वयाः शुक्रशोणितस्थित वातादि दोष जनिताः । *S.Su 24/5 (Dalhaṇa)*

Vitiation of *śukra* and *śoṇita* by *vātādi doṣa* manifest *ādibala pravṛtta vyādhi*.

कुष्ठार्श प्रभृतयः–प्रभृतिर्ग्रहणान्मेह क्षयादयः ।

S.Su 24/5 (Dalhaṇa)

Prameha, kṣaya also comes under this group.

आदिबलप्रवृत्ता दुष्ट शुक्रशोणित बलजाताः ।

S.Su 24/5 (Dalhaṇa)

Afflicted *śukra* and *śoṇita* brings abnormalities in individuals through their inherent impure properties.

मातृजा इति मातुः शोणितजाः । *S.Su 24/5 (Dalhaṇa)*

Mātṛjā refers to mother's *śoṇita duṣṭi janya vikāra*.

पितृजाश्चेति पितुः शुक्रजाः । *S.Su 24/5 (Dalhaṇa)*

These are derived from father's *śukra*.

II आधिभौतिक (Ādibhautika)

a) संघातबल प्रवृत्ता (Sanghāta Bala Pravṛtta Vyādhi)

संघातबल प्रवृत्ता य आगन्तवो दुर्बलस्य बलवद्विग्रहात्; तेऽपि

द्विविधाः शस्त्रकृता व्यालकृताश्च । एते आधिभौतिकाः । *S.Su 24/6*

Sanghāta bala pravṛtta vyādhi's are those diseases which manifest due to assault to weak person by stronger person. It is subdivided into *śaṣtrakṛta* and *vyāla kṛta*. *Śastrakṛta vyādhi's* are those manifest due to injury by various weapons/ surgery.

व्यालकृता इति व्याला दुष्टव्याघादयः । *S.Su 24/5 (Dalhaṇa)*

Vyālakṛta are the diseases manifests due to fierce or wild animals like wicked tiger.

III आधि दैविक व्याधि (Ādidaivika Vyādhi)

a) कालबल प्रवृत्त व्याधि (Kālabala Pravṛtta Vyādhi)

कालबल प्रवृत्ता ये शीतोष्णवातवर्षातप प्रभृतिनिमित्ताः; तेऽपि द्विविधाः व्यापन्नऋतुकृताः, अव्यापन्नऋतुकृताश्च । *S.Su 24/7*

Kālabala pravṛtta vyādhi's occur due to effect of cold, heat, wind, sunlight etc. It is divided into two kinds i.e. *vyāpannaṛtukṛtā* and *avyāpannaṛtukṛta.*

काल शीतोष्ण वर्ष लक्षणः षड्तुकः ।
S.Su 24/7 (Dalhaṇa)

Kālabala pravṛtta diseases evolving out of variation in various seasons like rainy season, summer, winter. Diseases may arise from normal as well as abnormal seasons. Diseases are *jāḍya, dāha, kampa, vṛṇa* and *jvara* etc.

तत्र अव्यापन्नेषुश्रुतुष्वव्यापन्ना ओषधयोभवन्त्यापश्च उपयुज्यमानाः प्राणायुर्बल वीर्यौजस्कर्यो भवन्ति । *S.Su 6/15*

Avyāpanna ṛtus are those in which season is not deranged, the herbs grow unaffected and water is free from contamination. This *ṛtu* promotes vitality, longevity, strength, energy and *ojus.*

ओजः हृदयाश्रितं सत्पधातु स्नेहः । *S.Su 24/5 (Dalhaṇa)*

Oja is situated in *hṛdaya* and it is the essence of all 7 *dhātus.*

तेषां पुनर्ण्यापदोऽदृष्टकारिताः, शीतोष्ण वातवर्षाणि खलु विपरीतान्योषधी व्यापादययन्त्यापश्च । *S.Su 6/16*

Vyapanna ṛtukṛta is a condition manifest due to deranged seasons, it results due to unseen factor. Diseases arises due to abnormal cold, heat, air and rains. Water and herbs are adversely affected and are not useful for usage. By their use there may be appearance of various diseases or epidemics leading to death of mass people.

b) दैवबल प्रवृत्ता व्याधि (Daivabala Pravṛtta Vyādhi)

दैवबल प्रवृत्ता इति दैवशक्ति जाता इत्यर्थः । *S.Su 24/7 (Dalhaṇa)*

Daivabala pravṛtta vyādhi occurs due to supernatural powers

दैवबल प्रवृत्ता ये देवद्रोहादभिशप्तका अथर्वणकृता उपसर्गाश्च; तेऽपि द्विविधाः विद्युदशनिकृताः, पिशाचादिकृताश्च; पुनश्च द्विविधा संसर्गजा आकस्मि-काश्च । *S.Su 24/7 (Dalhaṇa)*

Daivabala pravṛtta vyādhi's are caused by curses of humiliated divine beings, curse of sages, Atharvan rites (magic spell) and calamities or contagious diseases from other person. It is divided into two types i.e. *Vidhyudaśani kṛtā* and *piśācādi kṛta*. Again subdivided into *saṁsargaja* and *ākasmikāsca.*

उपसर्गजा इति उपसृज्यन्त इत्युपसर्गाः पीडितजनसमीपोत्पन्न ज्वरादयः । *S.Su 24/7 (Dalhaṇa)*

Upasargaja vyādhi's are those manifest due to close assosiation with diseased persons.

Vidhyudaśani kṛtā occur due to lightening, thunderbolt etc. *Piśācādi kṛtā* are those, manifests due to evil spirits.

संसर्गज (Saṁsargaja)

संसर्गजा इति देवादिद्रोहकजनसंपर्कजा इत्यर्थः । *S.Su 24/7 (Dalhaṇa)*

Residing with persons who are cursed by almighty god.

आकस्मिक (Ākasmikā)

आकस्मिका इति विनैव संसर्ग प्रक्त न कर्म पीडितत्वेन जाता इत्यर्थः । *S.Su 24/7 (Dalhaṇa)*

These are the manifestations results suddenly without any apparent cause.

c) स्वभावबल प्रवृत्ता व्याधि (Svabhāva Bala Pravṛtta Vyādhi)

स्वभावबल प्रवृत्ता ये क्षुत्पिपासाजरामृत्यु निद्रा प्रभृतयः; तेऽपि द्विविधाः कालजा, अकालजाश्च; तत्र परिरक्षणकृताः कालजाः, अपरिरक्षणकृता अकालजाः । *S.Su 24/7 (Dalhaṇa)*

Svabhāva bala pravṛtta vyādhi's are those manifest naturally like hunger, thirst, old age, death, sleep etc. It is divided into two kinds i.e. *kālaja* and *akālaja*.

Kālaja vyādhi's are those manifests due to time factor inspite of taking all precautionary measures and as such they cannot be cured but can be managed by diet, *rasāyana* etc. or can be successively eliminated by applying *rasāyana* measures and other therapeutics mentioned under the management of natural disorders.

अकालजा असमये जाता इत्यर्थः । *S.Su 24/7 (Dalhaṇa)*

Akālaja vyādhi's appear at improper time and occur due to lack of effort in precautionary measures. These diseases can be managed based on *doṣic* treatment and treatment to *vyādhi* itself.

Two types of Vyādhi

त एते समासतः पुनर्द्विविधा भवन्ति । प्रत्युत्पन्नकर्मजाः पूर्वकर्मजाश्च ।

प्रत्युत्पन्न कर्म (Pratyutpanna Karma)

तत्र रोगोत्पत्तिं प्रति प्रत्युत्पन्नं कर्म यदनेनैव शरीरेण दृष्टमदृष्टश्चोद्धिश्याऽत्पे-पदिष्टानां विहितानां प्रतिषिद्धानाम मननुष्ठानमनुष्ठानं वा । *A.S.Su 22/1*

Activities of the present life may be seen or may not be. It is observed by not following the standard regimen prescribed by our great *ācāryās* or indulging into the activities which are contrary to prescribed regimen.

पूर्वकर्मज (Pūrva Karmaja)

जन्मान्तरातीतेन तु पूर्वम् । तत्तु पुन दैवाख्यमुक्त च नियतानियत भेदेन प्राक् । *A.S.Su 22/1*

Activities of the past lives, earlier it was named as *daiva* and it is of two kinds i.e. *niyata* (definite) and *aniyata* (indefinite).

उभयात्मक (Ubhayātmaka)

तस्माद् दुष्टहेतवः प्रत्युत्पन्नकर्मजाः विपरीता दैवजन्मानः अल्पनिदाना महारुजाश्चोभयात्मकाः । *A.S.Su 22/1*

It may be assumed that all seen activities are those of present life and opposite are unseen and having divine origin. Causes are mild but produce dreadful diseases, it may be observed in seen or unseen mixed features.

पराभिसंस्कारज (Parābhisaṁskāraja)

Parābhisaṁskāraja means concieved or developed by others. They argue that if all the effects are accepted due to ones own activities, then there will be no harm from enemies. That's why person do many acts to please another person and will try to get benefit and happiness from him or will get displeasure, misery, punishments from his improper activities. *A.S.Su 22/06*

दोषादि भेदेन त्रिधा (Doṣa Bhedena Tridhā)

यथा निदानं दोषोत्थः कर्मजो हेतुभिर्विना । महारम्भोऽल्पके हेतावातङ्को दोषकर्मजाः । *A.Hr.Su 12/58*

Doṣaja vyādhi's are those manifests due to particular causes for the aggravation of *doṣa* leading to development of *vikāra's* by disturbed *doṣa*.

Karmaja vyādhi's are those occurs due to without any apparent cause. *Doṣa karmaja vyādhi's* are those evolves out of less causative factors but produces terrific diseases.

Classification of Diseases Based on Prognosis

साध्यासाध्यविभागज्ञो ज्ञानपूर्वं चिकित्सकः । *S.Su 10/7*

Physician must identify the disease as curable and incurable and accordingly plan the treatment therapeutics to get success.

सुखसाध्यं मतं साध्यं कृच्छ्रसाध्यमथापि च ।
द्विविधं चाप्यसाध्यं स्याद्याप्यं यच्चानुपक्रमम् ।
साध्यानां त्रिविधश्चाल्पमध्यमोत्कृष्टतां प्रति।
विकल्पो, न त्वसाध्यानां नियतानां विकल्पना ।
C.Su 10/9-10

Curable diseases are subdivided into

sukhasādhya (curable without difficulty) and *kṛcchra sādhya* (curable with difficulty). Incurable diseases are subdivided into two types i.e. *yāpya* (manageable) and *anupakrama* (not manageable). Again curable diseases is subdivided into three types i.e. mild therapeutics, moderate therapeutics and excellent therapeutics. This may not be possible for incurable diseases.

तेषामपहरणं च बहुदोषे शोधनं, मध्यदोषे लङ्घनपाचनम्, अल्पदोषे संशमन-मिति । *S.Su 21/37 (Dalhaṇa)*

In severe morbid condition *śodhana* therapy is neccessary to eliminate excess *doṣās. Langhana* and *pācana* is sufficient to cure moderate degree of morbidity. Palliative therapy is enough for mild degree of morbidity.

सुखसाध्य (Sukha Sādhya)

हेतवः पूर्वरुपाणि रुपाण्यल्पानि यस्य च।
न च तुल्यगुणो दूष्यो न दोषः प्रकृतिर्भवेत्।
न च कालगुणस्तुल्यो न देशो दुरुपक्रमः।
गतिरेका नवत्वं च रोगस्योपद्रवो न च।
दोषश्चैकः समुत्पत्तौ देहः सर्वौषध क्षमः।
चतुष्पादोपपत्तिश्च सुखसाध्यस्य लक्षणम्॥

C.Su 10/11-13

Points indicating good prognosis are as follows :

1. Etiology, prodromal symptoms, symptomatology all are mild.
2. Qualities of the involved *dhātu* are not homologous with *doṣa.*
3. There won't be any similarity in the involved *doṣās* with *prakṛti.*
4. There may not be any suitable environment for the development of the disease in respect to season and qualities.
5. Land may not be conducive for the aggravation of *doṣās.*
6. Only one path is involved.
7. Early onset with less duration.
8. Free from complications.
9. Only one *doṣa* is involved in the pathogenesis.
10. Body is strong both physically and mentally to overcome the adverse effects of therapeutics and all strong, moderate and mild medicaments may be employed as per disease.
11. All the four fold therapeutic measures are easily available.
12. Youth, male and one who has control over sense organs. A.S.Su 2/26
13. Vital organs are spared.
14. केवलः समदेहाग्नेः सुखसाध्यतमो गदः । *(S.Su. 35/46)*
    Whose *agni* functions are normal.
15. साध्यान साधयेत् । *(S.Su. 10/6)*
    Treat treatable diseases
16. If it is contrary to place, constitution, suitablity and season. *S.Su 35/45*

कृच्छ्रसाध्य (Kṛcchrasādhya)

निमित्त पूर्वरुपाणां रुपाणां मध्यमे बले । काल प्रकृति दूष्याणां सामान्येऽन्यतमस्य च गर्भिणी वृद्धबालानां नात्युपद्रवपीडितम् । शस्त्रक्षाराग्निकृत्यानामनवं कृच्छ्र देशजम् । विद्यादेकपथं रोगं नातिपूर्ण चतुष्पदम् । द्विपथं नातिकालं वा कृच्छ्रसाध्यं द्विदोषजम् ।

C.Su 10/14-16

The following points favour the diseases which cures with dificulty.

1. Causative factors, premonitory symptoms, symptomatology all are moderate in strength.
2. Qualities of either *kāla, prakṛti & dhātus* are similar to *doṣa.*
3. If disease manifest to pregnant women, old age person and childrens.
4. Moderate complications arises.
5. Disease should be managed by surgery, alkali application and cauterization.
6. Diseases having moderate duration.
7. Vital organs like heart, brain, joints are involved.
8. Persons suffering from diseases in such lands, where their aggravation is mentioned. For example–
   If patient suffering from *vātavyādhi* in *jāṅgaladeśa,* which predominates *vāta,* is very difficult to cure.
9. Diseases involving only one path but not fully supported by four limbs of treatment.

10. There may be an involvement of two systems but not having longer duration.
11. Involvement of two *doṣās.*
12. Treatment may be continued for many days *(A.S.Su 2/20)*
13. Has many incurable symptoms *(A.S.Su 2/20)*

याप्य [Yāpya (Manageable Diseases)]

The diseases which are said to be manageable and the following points suggest in favour of *yāpyatā.*

याप्यान् यापयेत् । *S.Su 10/6*

Manage the manageable diseases.

शेषत्वादायुषो याप्यमसाध्यं पथ्यसेवया । लब्धाल्पसुखमल्पेन हेतुनाऽऽशुप्रवर्तकम् । गम्भीरं बहुधातुस्थं मर्म सन्धिसमाश्रितम् । नित्यानुशायिनं रोगं दीर्घकालमवस्थितम् । विद्याद्विदोषजम् ।
C.Su 10/17-18

The following points indicates the *yāpya* nature of disease.

1. Disease persist for the remaining period of life.
2. Person is managing the life by taking proper therapeutics along with wholesome regimen and enjoying little comfort and happiness for the relief to his ailments.
3. Symptoms may aggravate if person adopts unwholesome dietetics and behaviour or by consumption of etiological factors.
4. Deeper *dhātus* are involved i;e *dhātugatajvara, dhātugata kuṣṭha* etc.
5. Vital organs like *marma* and *sandhi* affected.
6. Disease persist continously for longer period of time.
7. Diseases manifest by involving two *doṣās.*
8. Does not get cured without leaving remnants. *A.S.Su 2/21*
9. Diseases manifest due to bad actions of patient. *A.S.Su 2/21*
10. Patient is surviving due to his due span of life. *A.S.Su 2/21*
11. Patient dies, if medication is stopped. *S.Su 23/10-10*

प्रत्याख्येय [Pratyākhyeya (Absolute incurability) or अनुपक्रम (Anupakrama)]

तत् प्रत्याख्येयं त्रिदोषजम् ।
क्रियापथमतिक्रान्तं सर्वमार्गानुसारिणम् ।
औत्सुक्यारतिसंमोहकरमिन्द्रियनाशनम् ।
दुर्बलस्य सुसंवृद्धं व्याधिं सारिष्टमेव च ।
C.Su 10/19-20

The following points suggest the absolute incurability of the disease are as follows–

1. All the three *doṣās* are involved.
2. Diseases not responding to all therapeutic measures.
3. Spreaded to all directions.
4. Diseases causes excitement, restlessness and patient may become unconscious.
5. All the sense organs afflicted badly.
6. Patient becomes weak and emaciated and disease advances to deeper *dhātus* involving all the *dhātus.*
7. Patient develops some omnious symptomatology indicating death of the patient.
8. Patient develops giddiness, delusion and restlessness *A.S.Su 2/22*
9. परिसंवत्सरोत्थितांश्च विकारान् प्रायशो वर्जयेत् ।
   S.Su. 10/6
   Don't treat the patient which have persisted for more than one year.
10. This stage destroys the potencies of drugs because of firmness, severity and infiltrating *dhātus* as evil seizer counteracts the *manthrās. S.Su 23/15-16*
11. क्रमेणोपचयं प्राप्य धातुननुगतः शनैः । *S.Su. 23/15-16*
    Gradually affects deeper *dhātus* & become incurable.

Sometimes curable diseases also become incurable or difficult to cure in following persons are as follows– *S.Su. 10/8*

1. श्रोत्रिय– Priests or students
2. नृप– King
3. स्त्री– Women
4. बाल– Children

5. वृद्ध- Aged
6. भीरु- Frightful (timid)
7. राजसेवक- Servants of the king
8. कीतव- Gambler
9. दुर्बल- Debiliated
10. वैद्यविदग्ध- Quacks
11. व्याधिगोपक- Hiding the disease
12. दरिद्र- Poor
13. कृपण- Miser
14. क्रोध- Anger
15. नानामनात्मवता- Those not disciplined in their senses and mind
16. अनाथ- Destitute (orphans)

सप्तविध दुःख (7 Varieties of Diseases)

सप्तविधाः खलु रोगा भवन्ति । सहगर्भजातपीडाकाल प्रभाव स्वभावजा । ते तु पृथक् द्विविधाः । *A.S.Su 22/01*

Diseases are of seven varieties namely :

1. *Sahaja*
2. *Garbhaja*
3. *Jātaja*
4. *Piḍaja*
5. *Kālaja*
6. *Prabhāvaja*
7. *Svabhāvaja,* each one is subdivided into two, so totally 14 types.

1. ***Sahaja***– Same as described under *ādibala pravṛtta vyādhi.*
2. ***Garbhaja***– Same as described under *janmabala pravṛtta vyādhi.*
3. ***Jātaja***– जातजाः स्वापचारात् सन्तर्पणजा अपतर्पणजाश्च । *A.S.Su 22/1*

It is caused by one's own conduct. It is divided into two kinds *santarpaṇaja* and *apatarpaṇaja.*

4. ***Piḍaja***– पीडाकृताः क्षतभङ्ग प्रहार क्रोध शोक भयादयः शरीरमानसाश्च । *A.S.Su. 22/1*

These diseases manifest due to injury by weapons like wounds, fractures, blows, anger, grief, fear etc. classified as *śarira* and *mānasa.*

5. ***Kālaja***– Same as described under *kālabala pravritta vyādhi.*
6. ***Prabhāvaja***– Same as like that of *daiva bala pravṛtta vyādhi.*
7. ***Svabhāvaja***– Same as like that of *svabhava bāla pravṛtta vyādhi.*

सन्तर्पणोत्थ विकार (Santarpaṇottha Vikāra)

सन्तर्पयति सन्तर्पणमाचरति । *(Cakrapāṇi)*

Adoptation of food and activities which supports the oversaturation.

सन्तर्पणं हि द्विविधम्; स्निग्धं रुक्षणं च सन्तर्पण निमित्तजाः प्रकरणात् स्निग्ध सन्तर्पण निमित्तजा रोगा उपजायन्ते ।

C.Su 23/3-7 (Gaṅgādhara)

Santarpaṇa is classified into two i.e. *snigdha* and *rukṣa. Snigdha santarpana vikāra's* are those manifest due to excessive *santarpaṇa* of *dhātus* is called *santarpaṇotha vikārās.*

निदान (Etiological factors)

सन्तर्पयति यः स्निग्धै मधुरैर्गुरुपिच्छिलैः ।
नवान्नैर्नवमद्यश्च मांसैश्चानूपवारिजैः ।
गोरसैर्गौडिकैश्चान्नैः पैष्टिकैश्चातिमात्रशः ।
चेष्टाद्वेषि दिवास्वप्नशय्यासन सुखे रतः ।
रोगास्ततस्योपजायन्ते सन्तर्पणनिमित्तजाः ॥

C.Su 23/3-5

Āhāraja Kāraṇa

Excess consumption of unctous, sweet, heavy slimy substances, new cereals, fresh wine, meat of marshy and aquatic animals, milk and its products, jaggery and its preparations, flour preparations.

Vihāraja Kāraṇa

Along with consumption of *āhāraja kārana,* if person indulges following activities leads to manifestation of *santarpaṇa vikāra.*

- Lack of physical activities
- Day sleep
- Sleeps and sits in comfortable beds for longer duration

Vyādhi's

The following diseases are going to manifest are as follows–

- *Prameha, piḍakā, koṭha, kaṇḍū, pāṇdvāmaya, jvara, kuṣṭha*
- *Āmapradoṣaja vyādhi* (*visūcikā* & *alasaka*).
- *Mūtrakṛcchra*
- *Ārocaka*
- *Tandrā*

- *Ālasya*
- *Guru gātratā*
- *Indriya srotasām lepa* (Coating and obstruction in sense organs)
- *Buddhi moha* (*manomoha*)
- *Pramilaka* (*satam pradhyanam*)
- *Śopha*
- *Pratiśyaya* etc. *C.Su 23/4-7 (Cakrapāṇi and Gaṅgādhara)*

Mūḍhavāta, arśa, kāmalā, plīhā, hṛdroga, rājayakṣmā, kāsa, śvāsa, galagraha, kṛmi, grahaṇi doṣā, śvitram. C.Su 13/22-24

अपतर्पणोत्थ विकार (Apatarpaṇottha Vikāra)

अपतर्पणात् स्निग्धसंतर्पणविपरीत लङ्घनादि रुक्ष संतर्पणात्।
C.Su 23/27-28 (Gaṅgādhara)

Apatarpaṇa vikārā's manifest due to the adaptation of factors which are opposite to *snigdha santarpaṇa* like fasting, less intake of food, consumption of dry foods etc.

निदान (Etiological factors)

- Excess intake of pungent, astringent, bitter, rough, light, dried vegetables & meat etc.
- Excessive exercise, fighting with strong person, suppression of natural urges, excessive travelling, fast running etc.

Vikārā's

देहाग्नि बल वर्णौजः शुक्र मांस परिक्षयः ज्वरः।
कासानुबन्धश्च पार्श्वशूलमरोचकः।
श्रोत्र दौर्बल्यमुन्मादः प्रलापो हृदयव्यथा।
विण्मूत्र संग्रहः शूलं जङ्घोरुत्रिक संश्रयम्।
पर्वास्थिसन्धिभेदश्च ये चान्ये वातजा गदाः।
ऊर्ध्ववातादयः सर्वे जायन्ते तेऽपतर्पणात्।
C.Su 23/27-29

- *Deha kṣaya*
- *Balakṣaya*
- *Oja kṣaya*
- *Māmsa kṣaya*
- *Kāsa*
- *Arocaka*
- *Unmāda*
- *Hṛdaya vyatha*
- *Agnimārdavatā*
- *Varṇahāni*
- *Śukra kṣaya*
- *Jvara*
- *Pārśvasūla*
- *Śrotra daurbalya*
- *Pralāpa*
- *Viṭ saṅgha*
- *Mūtra saṅgha*
- *Jaṅghā śūla*
- *Sandhi bheda*
- *Śūla*
- *Parvāsthi bheda*
- *Vāta vyādhi*
- *Urdhvavāta vikāra* like *śvāsa* etc.

व्याधि परीक्षा (Vyādhi Parīkṣā - Examination of diseases)

व्याधिविशेषास्तु प्रागभिहिताः सर्व एवैते त्रिविधाः, साध्या, याप्याः, प्रत्याख्येयाश्च। तत्रैतान् भूयस्त्रिधा परीक्षेत्– किमपमौपसर्गिकः, प्राक्केवल, अन्यलक्षण इति। *S.Su 35/18*

Vyādhi is classified into three kinds based on prognosis namely *sādhya, yāpya* and *pratyākhyāya.* It can be examined by three factors i.e. *Aupasargika, prakkevala, anyalakṣaṇa.*

औपसर्गिक रोग (Aupasargika Roga)

तत्र, औपसर्गिको नाम यः पूर्वोत्पन्न व्यधिं जघन्यकालजातो व्याधिरुपसृजति, स, तन्मूल एवोपद्रवसज्ञः। *S.Su 35/18*

- It manifests after the manifestation of main disease
- It's main root i.e. component or pathogenetic factors are one and the same with that of main disease.
- It is also called upadrava.

प्राक्केवल और अन्य लक्षण (Prakkevala and Anyalakṣaṇa)

प्राक्केवलो नाम यः प्रागेवोत्पन्नो व्यधिर पूर्वरुपोऽनुपद्रवश्च; अन्यलक्षणो नाम यो भविष्यद् व्याधिरख्यापक, स पूर्वरूप सज्ञः।
S.Su 35/18

Prakkevala vyādhi's are those manifest from the very beginning without premonitory symptoms and complications.

Anyalakṣaṇa vyādhi's are those manifest before the manifestation of actual disease and it is also known as *pūrvarupa.*

गुरु लघु व्याधित (Guru Laghu Vyādhita)

इह खलु दौ पुरुषौ व्याधित रुपौ भवतः–गुरुव्याधित; लघुव्याधितश्च।

तत्र गुरु व्याधित एकः सत्वबलशरीर संपदुपेतत्वाल्लघुव्याधित इवदृश्यते, लघुव्याधितोऽपरः सत्वादीनामधमत्वाद गुरुव्याधित इव दृश्यते। तयोरकुशलाः केवलं चक्षुषैवं दृष्ट्वाऽध्यवस्यन्तो व्याधिगुरु लाघवे विप्रतिपद्यते॥ *C.Vi 7/3*

Two varieties of persons are seen as diseased. One variety of person, who is suffering from a severe disease appears to be suffering from a mild disease because of the superior quality of *manas, bala* and *śarira*.

Other variety of person, who is suffering from a mild disorder appear to be suffering from a severe disorder because of inferior *manas, bala* and *śarira*.

The physician who is not aware of this, fails to decide mildness or severity of the disease, only on gross observation of patient.

So, complete knowledge is essential to understand the concept clearly. If one who fails to diagnose disease accurately, he also fails in prescribing rational remedy. When they prescribe mild therapeutics for severely diseased individual, it will not cure the disease but on the contrary it aggravates the disease condition.

When they take mild disease as severe one and prescribes stronger therapeutics, which eliminates *doṣās* along with it manifests certain adverse reactions to the body. Thus those who regard the part of the means of knowledge as sufficient to provide knowledge of the entire objects, fall in their own pursuit. On the contrary, who prescribes the therapy after acquiring entire knowledge of the subject will gain desired success.

स्वतन्त्र परतन्त्र रोगः (Svatantra Paratantra Roga)

ते च रोगाः स्वप्रधाना भवन्त्यन्यपरिवारा वा क्रमादनुबन्ध्यनुबन्धाख्याः । तत्राद्यः स्वतन्त्राः स्पष्टाकृतयो यथास्वं समुत्थानोपशयाश्च । इतरे तु तद्विपरीताः । तद्वच्च दोषा अपि । तत्रान्यपरिवारा व्याधयो द्विविधाः । पुरोगामिनोऽनुगामिनश्च तेष्वाद्याः पूर्वरुपसज्ञाः उद्रद्रवास्त्वितरे तान्यथायथामेव वक्ष्यमाणानुपलक्षयेत् । प्रधानप्रशमे च प्रशमो भवति तेषामनुपशाम्यतो वा पश्चात्तानुपक्रमेत् । त्वरितं वा बलवन्तमुपद्रवं प्रधान विरोधेन । स हि पीडाकरतरो भवति । व्याधि परिक्लिष्टदेहत्वात् प्रमेह पिडकादिवत् । तथाऽन्यः प्रधान एव रोगोऽन्यस्य प्रधानस्य हेतुः भवति । यथा ज्वरो रक्तपित्तस्य रक्तपित्तं वा ज्वरस्य । तौ श्वासस्याप्लीहाजठरस्य । तच्छ्वयथोः । अर्शांसि गुल्मोदरातीसारग्रहणीनां । प्रतिश्यायः कासज्वरयोः । तौ क्षयस्य । क्षयः शोषस्य । एकश्चाऽपचारो निमित्तमेकस्य व्यधिः। बहूनां च तथा बहवः तद्वदेकं लिङ्गम् । एवमेव प्रशमेऽभ्यु पायः तथा स एवाऽन्यस्य प्रकोपे । तस्मात्तान वहितः सम्यगागमादिभिः परीक्षेत् ।
A.S.Su 22/10

These diseases manifest either as the chief one or as retinue (associate, accompanying) of another disease; known respectively as *anubandhya* (leader, primary, chief) and *anubandha* (follower, secondary, associate, retinue) the former is independent & has specific, well defined features (symptoms & signs) cause & diagnosis. The latter is its opposite. Similarly also the *doṣa* are of two kinds, anubandhya & anubandha.

Diseases which are secondary is of two kinds; *purogāmi* (manifesting first) & *anugāmi* (manifesting later). The former is known as *pūrvarūpa* & latter is known as *upadrava.* These will have to be recognised in particular contexts. They generally subside with the cure of the primary diseases but when they do not subside they should be treated after treating the powerful one. They should be attended immediately without opposing the primary disease because such complication cause severe troubles to the body which has become weak already by the disease, as seen in the case of diabetic carbuncles.

Further one primary disease may become the primary cause for another disease. For example, fever causes bleeding disorders or vice versa; both together may cause dyspnoea; spleenic disorders cause abdominal enlargement; which in turn cause dropsy; hemorrhoids may cause tumor and enlargement of abdomen, diarrhoea and duodenal disease; nasal catarrh may cause cough and fevers, these two become the cause for consumption for emaciation etc.

An improper act may produce single disease or group of diseases; in the same way appearance of one symptom denotes any one particular disease and also for many diseases; treatment of one disease may mitigate one but at the same time it may aggravate the other diseases.

Therefore physician has to examine the diseased person carefully by using appropriate diagnostic aids to get maximum results.

Two types of Vyādhi

तत्र विकाराः सामान्यजाः नानात्मजाश्च । *C.Su 20/10*

Vyādhi is classified into two kinds *sāmānyaja vyādhi* and *nānātmaja vyādhi.*

सामान्यज विकार (Sāmānyaja Vikāra)

सामान्यजा इति वातादिभिः प्रत्येकं मिलितैश्च ये जायन्ते । *C.Su 20/10 (Cakrapāṇi)*

तत्र सामान्यजा इति सामान्येन तत्रव्याधित्व रूपेण जायन्ते वाताद्वा पित्ताद्वा कफाद्वा द्वन्द्वाद्वा सन्निपाताद्वाऽन्यस्माद्वा ये ते सामान्यजाः । *C.Su 20/10 (Gaṅgādhara)*

Sāmānyaja vikāra's are those which manifest either by *vāta, pitta, kapha,* or in combination of two *doṣa* or in conglo-meration of three *doṣa* leading to manifestation of various disorders. Examples

One type of disease

एक उरुस्तम्भ इत्यामत्रिदोषसमुत्थः, एकः सन्यास इति त्रिदोषात्मको मनः शरीराधिष्ठानः, एको महागद इति अतत्वाभिनिवेशः । *C.Su 19/8*

1. *Urusthambha* caused due to *āma* and *tridoṣa.*
2. *Sanyāsa* manifest due to *tridoṣā's* involving both body & mind.
3. *Atatvabhiniveśa,* which is *mahāgada.* This disease is considered as incurable.

Diseases having 2 sub types C.Su 19/7

1. द्वौ ज्वराविति उष्णाभिप्रायः शीतसमुत्थश्च शीताभिप्रायश्चोष्ण-समुत्थः ।

Two kinds of *Jvara* i.e. :

i) *Śita samuttha*–manifest due to cold and patient finds comfort in hot substances.

ii) *Usṇa samuttha*–manifest due to heat substances and gets relieved by cold substances.

2. द्वौ व्रणावति निजश्चागन्तुजश्च ।

Two varieties of *Vraṇa* i.e. :

i) *Nija* (Endogenous)

ii) *Āgantuja* (Exogenous).

3. द्वावायामाविति बाह्यश्चाभ्यन्तरश्च ।

Two kinds of *Āyāma* (Body) i.e. i) *Bāhya* (Back ward) ii) *Abhyantara* (Forward).

4. द्वे गृध्रस्याविति वाताद्वातकफाच्च ।

Two kinds of *Gṛdhrasi* (Sciatica) i.e. :

i) *Vātaja gṛdhrasi*

ii) *Vāta kaphaja gṛdhrasi.*

5. द्वे कामले इति कोष्ठाश्रया शाखाश्रया च ।

Two types of *Kāmalā* i.e. :

i) *Koṣṭhāśraya kāmalā* (Hepato cellular)

ii) *Śākhāśraya kāmalā* (Obstructive jaundice).

6. द्विविधमाममिति अलसको विसूचिका च ।

Two kinds of *Āma* i.e. :

i) *Alasaka* (Intestinal torper)

ii) *Visūcikā* (Choleric diarrhoea).

7. द्विविधं वातरक्तमिति गम्भीरमुत्थानं च ।

Two kinds of *vātarakta* i.e. :

i) *Gambhīra vātarakta* (Deep seated)

ii) *Utthāna Vātarakta* (Superficial structures are involved).

8. द्विविधान्यर्शांसिति शुष्काण्यार्द्राणि च ।

Two kinds of *arśās* i.e. :

i) *Suṣka* (dry, non bleeding)

ii) *Ārdra* (wet, bleeding).

Diseases having 3 subtypes C.Su 19/6

1. त्रयः शोथा इति वातपित्तश्लेष्मानिमित्ताः ।

Śotha is classified into 3 kinds :

i) *Vātaja*

ii) *Pittaja*

iii) *Kaphaja*

2. त्रीणि किलासानिति रक्त ताम्रशुक्लानि ।

Kilāsa is of 3 types i.e. :

i) *Rakta kilāsa* (Red coloured)

ii) *Tāmra kilāsa* (Copper coloured)

iii) *Śukla kilāsa* (White coloured).

3. त्रिविधं लोहितपित्तमिति ऊर्ध्वभागमधो भागमुभयभागं च ।

Raktapitta (Bleeding disorder) is subclassified 3 kinds i.e. :

i) *Ūrdhvaga raktapitta* (Bleeding from upper channels)
ii) *Adhobhāga raktapitta* (Bleeding from lower channels)
iii) *Ubhaya raktapitta* (Bleeding from both upper and lower channels).

Diseases having 4 sub types C.Su 19/5

1. चत्वारोऽपस्मारा इति वातपित्तकफ सन्निपात निमित्ताः ।

Apasmāra is classified into 4 kinds :

i) *Vātaja apasmāra*
ii) *Pittaja apasmāra*
iii) *Kaphaja apasmāra*
iv) *Sannipātaja apasmāra.*

2. चत्वारोऽक्षिरोगाश्चत्वारः ।

Eye diseases are 4 types :

i) *Vātaja akṣi roga*
ii) *Pittaja akṣi roga*
iii) *Kaphaja akṣi roga*
iv) *Sannipātaja akṣi roga.*

3. कर्णरोगश्चत्वार ।

Karṇa (Ear) diseases are of 4 kinds :

i) *Vātaja karṇa roga*
ii) *Pittaja karṇa roga*
iii) *Kaphaja karṇa roga*
iv) *Sannipātaja karṇa roga.*

4. प्रतिश्यायश्चत्वारो ।

Pratiśyāya (discharge from nose) is of 4 kinds i.e. :

i) *Vātaja pratiśyāya*
ii) *Pittaja pratiśyāya*
iii) *Kaphaja pratiśyāya*
iv) *Sannipātaja pratiśyāya.*

5. मुखरोगश्चत्वारो ।

Mukha roga (diseases of oral cavity) is of 4 kinds i.e. :

i) *Vātaja mukha roga*
ii) *Pittaja mukha roga*
iii) *Kaphaja mukha roga*
iv) *Sannipātaja mukha roga.*

6. ग्रहणी दोषश्चत्वारो ।

Grahaṇi doṣa classified into 4 kinds :

i) *Vataja grahaṇi doṣa*
ii) *Pittaja grahaṇi doṣa*
iii) *Kaphaja grahaṇi doṣa*
iv) *Sannipātaja grahaṇi doṣa.*

7. मदश्चत्वारो ।

Mada (intoxication) is of 4 kinds :

i) *Vātaja mada*
ii) *Pittaja mada*
iii) *Kaphaja mada*
iv) *Sannipātaja mada.*

8. मूर्च्छाश्चत्वारो ।

Mūrchā is of 4 kinds i.e. :

i) *Vātaja mūrchā*
ii) *Pittaja mūrchā*
iii) *Kaphaja mūrchā*
iv) *Sannipātaja mūrchā.*

9. चत्वारः शोषा इति साहस सन्धारण क्षय विषमाशनजा ।

4 types of *Śoṣa* (*dhātu* depletion disorder) i.e. :

i) *Sāhasajanya śosa*
ii) *Sāndhāraṇajanya śoṣa*
iii) *Kṣayajanya śoṣa*
iv) *Viṣamāśanajanya śoṣa.*

10. चत्वारि क्लैब्यानीतिबीजोपघाताद्ध्वजभङ्गाज्जरायाः शुक्रक्षयच्च ।

Klaibya (impotency) is of 4 kinds :

i) *Bijopaghātaja klaibya*
ii) *Dvaja bhaṅgaja klaibya*
iii) *Jarāja klaibya*
iv) *Śukrakṣayaja klaibya.*

Diseases having 5 sub types C.Su 19/4

1. पंचगुल्मा इति वातपित्त कफ सन्निपातशोणितजाः ।

Gulma is classified into 5 kinds :

i) *Vātaja gulma*
ii) *Pittaja gulma*
iii) *Kaphaja gulma*
iv) *Sannipātaja gulma*
v) *Śoṇitaja gulma.*

2. पंचप्लीह दोषा ।

i) *Vātaja plīha doṣa*
ii) *Pittaja plīha doṣa*
iii) *Kaphaja plīha doṣa*
iv) *Sannipātaja plīha doṣa*
v) *Soṇitaja plīha doṣa.*

3. पंच कासा इति वातपित्तकफक्षतक्षयजाः ।

Kāsa is of 5 types :

i) *Vātaja kāsa*
ii) *Pittaja kāsa*
iii) *Kaphaja kāsa*
iv) *Kṣataja kāsa*
v) *Kṣayaja kāsa.*

4. पञ्चश्वासा इति महोर्ध्वच्छिन्नतमकक्षुद्राः ।

Śvāsa is of 5 types i.e. :

i) *Mahā śvāsa*
ii) *Urdhva śvāsa*
iii) *Chinna śvāsa*
iv) *Tamaka śvāsa*
v) *Kṣudra śvāsa.*

5. पञ्च हिक्का इति महती गम्भीरा व्यपेता क्षुद्राऽन्नजा च ।

Hikkā is of 5 types :

i) *Mahati hikkā*
ii) *Gambhīra hikkā*
iii) *Vyapetā hikkā*
iv) *Kṣudra hikkā*
v) *Annaja hikkā.*

6. पञ्च तृष्णा इति वातपित्तामक्षयोपसंसर्गात्मिकाः ।

Tṛṣṇā is of 5 types :

i) *Vātaja tṛṣṇā*
ii) *Pittaja tṛṣṇā*
iii) *Āmaja tṛṣṇā,*
iv) *Kṣayaja tṛṣṇā*
v) *Upasaṁsargātmika tṛṣṇā.*

7. पञ्च छर्दय इति द्विष्टार्थसंयोगजा वातपित्तकफ सन्निपातोद्रेकोत्थाश्च ।

Chardi is of 5 types :

i) *Dviṣṭārtha saṁyogaja chardi*
ii) *Vātaja saṁyogaja chardi*
iii) *Pittaja Saṁyogaja chardi*
iv) *Kaphaja saṁyogaja chardi*
v) *Sannipātaja saṁyogaja chardi.*

8. पञ्चभक्तस्यानशनस्थानानीति वातपित्त कफासन्निपातद्वेषाः ।

Bhaktasyānaśana is of 5 kinds :

i) *Vātaja bhakta-śyānaśana*
ii) *Pittaja bhaktaśyānaśana*
iii) *Kaphaja bhakta-śyānaśana*
iv) *Sannipātaja bhaktaśyānaśana*
v) *Dveṣā bhaktaśyānaśana.*

9. पञ्च शिरोरोगा इति पूर्वोद्दिशमभिसमस्य वातपित्त कफ सन्निपात क्रिमिजाः ।

Śiroroga is of 5 kinds :

i) *Vātaja śiro roga*
ii) *Pittaja śiro roga*
iii) *Kaphaja śiro roga*
iv) *Sannipātaja śiro roga*
v) *Kṛmija śiro roga.*

10. पञ्च हृद्रोग इति शिरोरोगैर्व्याख्याता ।

Hṛdroga is of 5 kinds :

i) *Vātaja hṛdroga*
ii) *Pittaja hṛdroga*
iii) *Kaphaja hṛdroga*
iv) *Sannipātaja hṛdroga*
v) *Kṛmija hṛdroga.*

11. पञ्च पाण्डुरोगा इति वात पित्त कफ सन्निपातमृद्भक्षणजाः ।

Pāṇḍuroga is of 5 types :

i) *Vātaja pāṇḍu roga*
ii) *Pittaja pāṇḍu roga*
iii) *Kaphaja pāṇḍu roga*
iv) *Sannipātaja pāṇḍu roga*
v) *Mṛdbhakṣaṇaja pāṇḍu roga.*

12. पञ्चोन्माद इति वातपित्तकफ सन्निपातागन्तु निमित्ताः ।

Unmāda is of 5 types :

i) *Vātaja unmāda*
ii) *Pittaja unmāda*
iii) *Kaphaja unmāda*
iv) *Sannipātaja unmāda*
v) Āgantuja unmāda.

Diseases having 6 sub types C.Su 19/3

1. षडतीसारा इति वातपित्तकफसन्निपात भय शोकजाः ।

Atisāra is classified into 6 types :

i) *Vātaja atisāra*
ii) *Pittaja atisāra*
iii) *Kaphaja atisāra*
iv) *Sannipātaja atisāra*
v) *Bhayaja atisāra*
vi) *Śokaja atisāra.*

2. षडुदावर्ता इति वातमूत्रपुरीषशुक्रच्छर्दि क्षवथुजाः ।

Udāvarta is of 6 types :

i) *Vātaja udāvarta*
ii) *Mūtraja udāvarta*
iii) *Purīṣaja udāvarta*

iv) *Śukraja udāvarta*
v) *Chardija udāvarta*
vi) *Kṣavathuja udāvarta.*

Diseases having 7 sub types C.Su 19/2

1. सप्त कुष्ठानिति कपालोदुम्बरमण्डलर्ष्यजिह्वपुण्डरीक सिध्म काकणानि ।

Kuṣṭha is of 7 types :

i) *Kapāla kuṣṭha*
ii) *Udumbara kuṣṭha*
iii) *Maṇḍala kuṣṭha*
iv) *Ṛṣyajihvā kuṣṭha*
v) *Puṇḍarika kuṣṭha*
vi) *Sidhma kuṣṭha*
vi) *Kākaṇaka kuṣṭha.*

2. सप्त पिडका इति शराविका कच्छपिका जालिनी सर्षप्यलजी विनता विद्रधी च ।

Seven varieties of *Piḍakā's* are :

i) *Śarāvikā*
ii) *Kacchapikā*
iii) *Jālini*
iv) *Sarṣapi*
v) *Alaji*
vi) *Vinatā*
vii) *Vidradhi.*

3. सप्त विसर्पा इति वातपित्तकफाग्निकर्दमक ग्रन्थिसन्निपाताख्याः ।

7 kinds of *Visarpa* i.e. :

i) *Vātaja visarpa*
ii) *Pittaja visarpa*
iii) *Kaphaja visarpa*
iv) *Agni visarpa*
v) *Kardamaka visarpa*
vi) *Granthi visarpa*
vii) *Sannipātaja visarpa.*

Diseases having 8 sub types C.Su 19/1

1. अष्टावुदराणीति वातपित्तकफसन्निपातप्लीहबद्धच्छिद्रोदकोदराणि ।

8 kinds of *udara roga.*

i) *Vātaja udara*
ii) *Pittaja udara*
iii) *Kaphaja udara*
iv) *Sannipātaja udara*
v) *Plīhaja udara*
vi) *Baddha udara*
vii) *Cchidrodara*
viii) *Dakodara.*

2. अष्टौ मूत्राघाता इति वातपित्तकफ सन्निपाताश्मरीशर्करा शुक्र शोणितजाः ।

Mūtrāghāta is of 8 types :

i) *Vātaja mūtrāghāta*
ii) *Pittaja mūtrāghāta*
iii) *Kaphaja mūtrāghāta*
iv) *Sannipātaja mūtrāghāta*
v) *Aśmarija mūtrāghāta*
vi) *Śarkarāja mūtrāghāta*
vii) *Śukraja mūtrāghāta*
viii) *Śoṇitaja mūtrāghāta.*

3. अष्टौ क्षीरदोषा इति वैवर्ण्य दौर्गन्ध्यं वैरस्यं पैच्छिल्यं फेनसङ्घातो रौक्ष्यं गौरवमतिस्नेहश्च ।

8 kinds of *Kṣira doṣās :*

i) *Vaivarṇya*
ii) *Vairasyam*
iii) *Daurgandhya*
iv) *Paicchilyam*
v) *Phena saṅghāta*
vi) *Rukṣa*
vii) *Gaurava*
viii) *Atisneha.*

4. अष्टौ रेतोदोषा इति तनु शुष्कं फेनिलमश्वेतं पूत्य अतिपिच्छिलमन्य धातूपहितमवसादि च ।

8 kinds of *Reto doṣās* (Seminal vitiation) are i.e. :

i) *Tanu*
ii) *Śuṣkam*
iii) *Phenila*
iv) *Aśveta*
v) *Pūti*
vi) *Atipicchila*
vii) *Anyadhātupahita*
viii) *Avasādi.*

Diseases having 20 sub types C.Su 19/9

1. विंशतिः कृमिजातय इति यूका पिपीलिकाश्चेति द्विधा बहिर्मलजाः । केशादा लोमादा लोमद्वीपाः सौरसा औदुम्बरा जन्तुमातरश्चेति षट् शोणितजाः । अन्त्रादा उदरावेष्टा हृदयादाश्चुरवो दर्भपुष्पाः सौगन्धिका महागुदश्चेति सप्तकफजाः, ककेरुका मकेरुका लेलिहाः स शूलकाः सौसुरादाश्चेति पञ्च पुरीषजाः ।

20 types of *kṛmi roga* described

***Bahirmalaja kṛmi* 02**

i) *Yūkā*
ii) *Pipīlikā*

***Śoṇitaja kṛmi* 06**

iii) *Keśādā*
iv) *Lomādā*
v) *Lomadvipa*
vi) *Saurasā*
vii) *Audumbarā*
viii) *Jantumātara*

***Kaphaja kṛmi* 07**

ix) *Antrāda*
x) *Udarāveṣṭa*
xi) *Hṛdayāda*
xii) *Curu*
xiii) *Darbhapuṣpa*
xiv) *Saugandhikā*
xv) *Mahāguda*

Purīṣaja kṛmi 08

xvi) *Kakeruka*
xvii) *Makeruka*
xviii) *Leliha*
xix) *Śūlaka*
xx) *Sausurāda*

1. विंशतिः प्रमेहा इत्युदकमेहश्चेक्षुबालिका रसमेहश्च सान्द्रमेहश्च सान्द्रप्रसादमेहश्च शुक्लमेहश्च शुक्रमेहश्च शीतमेहश्च शनैर्मेहश्च सिकतामेहश्च लालामेहश्चेति दश श्लेष्मनिमित्ताः, क्षारमेहश्च कालमेहश्च, नीलमेहश्च लोहितमेहश्च मञ्जिष्ठा मेहश्च हरिद्रा मेहश्चेति षद् पित्तनिमित्ताः। वसा मेहश्च मज्जामेहश्च हस्ति मेहश्च मधुमेहश्चेति चत्वारो वातनिमित्ता। *C. Su. 19/9*

20 types of Prameha

***Kaphaja Prameha* 10**

i) *Udaka meha*
ii) *Ikṣubālikarasa meha*
iii) *Sāndra meha*
iv) *Sāndra prasāda meha*
v) *Śukla meha*
vi) *Śukra meha*
vii) *Śita meha*
viii) *Śanair meha*
ix) *Sikatāmeha*
x) *Lālā meha*

***Pittaja Prameha* 06**

xi) *Kṣāra meha*
xii) *Kāla meha*
xiii) *Nila meha*
xiv) *Lohita meha*
xv) *Manjiṣṭā meha*
xvi) *Hāridrā meha*

***Vātaja Prameha* 04**

xvii) *Vasā meha*
xviii) *Majjā meha*
xix) *Hasti meha*
xx) *Madhu meha.*

20 types of Yoni Vyāpat C. Su. 19/9

1. *Vātaja Yoni Vyāpat*
2. *Pittaja Yoni Vyāpat*
3. *Kaphaja Yoni Vyāpat*
4. *Sannipātaja Yoni Vyāpat*
5. *Raktayoni*
6. *Arajaskā*
7. *Acaraṇa*
8. *Ati caraṇā*
9. *Prak caraṇā*
10. *Upaplutā*
11. *Pariplutā*
12. *Udāvartini*
13. *Karṇini*
14. *Putraghnī*
15. *Antarmukhi*
16. *Sūcimukhi*
17. *Śuskā*
18. *Vāmini*
19. *Ṣaṇḍayoni*
20. *Mahāyoni*

Diseases having 2 sub types. *C.Ci 3/32-33*

1. *Jvara–*	I	(A) *Śarira*
		(B) *Mānasa*
	II	(A) *Saumya*
		(B) *Āgneya*
	III	(A) *Antarvega*
		(B) *Bahirvega*
	IV	(A) *Prakṛta*
		(B) *Vaikṛta*
	V	(A) *Sādhya*
		(B) *Asādhya*

Diseases having 5 sub types. *C.Ci 3/34*

1. *Jvara–*	(A) *Santata*
	(B) *Satata*
	(C) *Anyadhyuṣka*
	(D) *Tṛtiyaka*
	(E) *Caturthaka*
2. *Arocaka–*	(A) *Vātaja arocaka*
S.Utt 57/3	(B) *Pittaja arocaka*
	(C) *Kaphaja arocaka*
	(D) *Sannipātaja arocaka*
	(E) *Bhaktopaghāta arocaka*
3. *Upadaṁśa–*	(A) *Vātaja upadaṁśa*
(M.Ni 47/5)	(B) *Pittaja upadaṁśa*
	(C) *Kaphaja upadaṁśa*
	(D) *Raktaja upadaṁśa*
	(E) *Sannipātaja upadaṁśa*

Diseases having 9 sub types.

1. *Śotha–*	(A) *Vātaja śotha*
M.Ni 36/2-3	(B) *Pittaja śotha*
	(C) *Kaphaja śotha*
	(D) *Vāta-pittaja śotha*
	(E) *Vāta-kaphaja śotha*
	(F) *Kapha-pittaja śotha*
	(G) *Abhighātaja śotha*
	(H) *Viṣaja śotha*

Diseases having 7 sub types.

1. *Vṛddhi–*	(A) *Vātaja vṛddhi*
(M.Ni 37)	(B) *Pittaja vṛddhi*
	(C) *Kaphaja vṛddhi*
	(D) *Raktaja vṛddhi*
	(E) *Medaja vṛddhi*
	(F) *Mūtraja vṛddhi*
	(G) *Āntraja vṛddhi*

Diseases having 6 types.

1. *Mūrchā–*	(A) *Vātaja mūrchā*
(S.Utt 46/7-8)	(B) *Pittaja mūrchā*
	(C) *Kaphaja mūrchā*
	(D) *Śoṇitaja mūrchā*
	(E) *Madhyaja mūrchā*
	(F) *Viṣaja mūrchā*
2. *Svarabheda–*	(A) *Vātaja svarabheda*
(S.Utt 53/3)	(B) *Pittaja svarabheda*
	(C) *Kaphaja svarabheda*
	(D) *Sannipātaja svarabheda*
	(E) *Kṣayaja svarabheda*
	(F) *Medaja svarabheda*
3. *Arśa–*	(A) *Vātaja arśa*
(M.Ni 5/1)	(B) *Pittaja arśa*
	(C) *Kaphaja arśa*
	(D) *Sannipātaja arśa*
	(E) *Raktaja arśa*
	(F) *Sahaja arśa*

Diseases having 7 sub types.

1. *Jvara–*	(A) *Rasa dhātugata jvara*
(C.Ci 3/35)	(B) *Raktadhātugata jvara*
	(C) *Māmsa dhātugata jvara*
	(D) *Meda dhātugata jvara*
	(E) *Asthi dhātugata jvara*
	(F) *Majjā dhātugata jvara*
	(G) *Śukra dhātugata jvara*
2. *Raktapitta–*	(A) *Kaphaja raktapitta*
(C.Ci 4/11-12)	(B) *Vātaja raktapitta*
	(C) *Pittaja raktapitta*
	(D) *Vāta-pittaja raktapitta*
	(E) *Vāta-kaphaja raktapitta*
	(F) *Kapha-pittaja raktapitta*
	(G) *Sannipātika raktapitta*
3. *Tṛṣṇā–*	(A) *Vātaja tṛṣṇā*
	(B) *Pittaja tṛṣṇā*
	(C) *Kaphaja tṛṣṇā*
	(D) *Kṣataja tṛṣṇā*
	(E) *Kṣayaja tṛṣṇā*
	(F) *Āmaja tṛṣṇā*
	(G) *Annaja tṛṣṇā*

Diseases having 8 sub types.

1. *Jvara–*	(A) *Vātaja Jvara*
(C.Ci 3/35)	(B) *Pittaja Jvara*
	(C) *Kaphaja Jvara*
	(D) *Sannipātaja Jvara*
	(E) *Vāta-pittaja Jvara*
	(F) *Vāta-kaphaja Jvara*
	(G) *Kapha-pittaja Jvara*
	(H) *Āgantujaja Jvara*
2. *Śoṣa–*	(A) *Vyavāya śoṣi*
(S.Utt 41/16)	(B) *Śoka śoṣi*
	(C) *Jarā śoṣi*
	(D) *Adhvaśoṣi śoṣi*
	(E) *Vyāyāma śoṣi*
	(F) *Vṛṇa śoṣi*
	(G) *Urakṣata śoṣi*
	(H) *Upavāsataḥ śoṣi*
3. *Śūla–*	(A) *Vātaja śūla*
(M.Ni 26/1)	(B) *Pittaja śūla*
	(C) *Kaphaja śūla*
	(D) *Sannipātaja śula*
	(E) *Vāta-pittaja śūla*
	(F) *Vāta kaphaja śūla*
	(G) *Kapha-pittaja śūla*
	(H) *Āmaja śūla*

Diseases having 11 sub types.

1. *Kuṣṭha–*	(A) *Ekakuṣṭha*
(C.Ci 7/21-26)	(B) *Carmākhya*
	(C) *Kiṭibha*
	(D) *Vipādikā*
	(E) *Alasaka*
	(F) *Dadru*
	(G) *Carmadala*
	(H) *Pāmā*
	(I) *Visphoṭa*
	(J) *Śatāru*
	(K) *Vicarcikā*

Diseases having 12 types.

1. *Mūtrāghāta–* *(S.Utt 58/3-4)*	(A) *Vāta kuṇḍalikā*
	(B) *Aṣṭhilā*
	(C) *Vāta basti*
	(D) *Mūtrāṣṭhilā*
	(E) *Mūtrajaṭhara*
	(F) *Mūtrotsaṅga*
	(G) *Mūtrakṣaya*
	(H) *Mūtragranthi*
	(I) *Mūtraśukra*
	(J) *Uṣṇavāta*
	(K) *Mūtrasāda-kaphaja*
	(L) *Mūtrasāda-pittaja*

Classification of Diseases

According to *Śaraṅgadhara* (7th chapter *Pūrvakhaṇḍa*)

Diseases having 1 type.

1. *Kāmalā*
2. *Paramada*
3. *Kumbhakāmalā*
4. *Pānājirṇa*
5. *Halimaka*
6. *Pānavibhrama*
7. *Urograha*
8. *Pānātyaya*
9. *Soma roga*
10. *Bhrama*
11. *Medo roga*
12. *Nidrā*
13. *Aṇḍavṛddhi*
14. *Tandrā*
15. *Ganḍamāla*
16. *Sanyāsa*
17. *Gaṇḍālaji*
18. *Glāṇi*
19. *Udarda*
20. *Annadrava śūla*
21. *Śitapitta*
22. *Pittajvarajanya śūla*

Diseases having 2 sub types

1. *Ānāha–*	(A) *Pakvaśayodbhava*
	(B) *Āmāśayodbhava*
2. *Koṣṭhabheda–*	(A) *Chinnāntra*
	(B) *Niśṛtāntraka*
3. *Arśa–*	(A) *Sahaja*
	(B) *Uttara janmaja*
	(A) *Śuṣka*
	(B) *Aṛdra*

Diseases having 3 types.

1. *Ajīrṇa–*	(A) *Viṣṭabdhājīrṇa (Vāta)*
	(B) *Vidagdhājīrṇa (Pitta)*
	(C) *Āmājīrṇa (Kapha)*
2. *Alasaka–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
3. *Visūcikā–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
4. *Carmakila–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
5. *Raktapitta–*	(A) *Ūrdhvaga*
	(B) *Adhoga*
	(C) *Ubhaya*
6. *Āmlapitta–*	(A) *Vātaja*
	(B) *Kaphaja*
	(C) *Kapha vātaja*

Diseases having 4 sub types.

1. *Pravāhikā–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
	(D) *Raktapravāhikā*
2. *Agni vikāra–*	(A) *Viṣamāgni (Vāta)*
	(B) *Tikṣṇāgni (Pitta)*
	(C) *Mandāgni (Kapha)*
	(D) *Bhasmakāgni (Vāta-pitta)*
3. *Mūrchā–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
	(D) *Sannipātaja*
4. *Apasmāra–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
	(D) *Sannipātaja*
5. *Āmavāta–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
	(D) *Sannipātaja*
6. *Aśmari–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
	(D) *Śukrāśmari*

Diseases having 5 sub types.

1. *Pāṇḍu–*	(A) *Vātaja*
	(B) *Pittaja*
	(C) *Kaphaja*
	(D) *Sannipātaja*
	(E) *Mṛttikā bhakṣaṇajanya*

2. *Kāsa–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Urakṣataja*
(E) *Dhātukṣayaja*

3. *Kṣaya–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Urakṣataja*

4. *Arocaka–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Manastāpaja*

5. *Grahaṇi doṣa–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Āmaja*

6. *Upadaṁśa–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Raktaja*

7. *Puṁstva doṣa–* (A) *Irṣyaka*
(B) *Āsekya*
(C) *Kumbhikā*
(D) *Sugandhi*
(E) *Ṣaṇḍa*

Diseases having 6 sub types.

1. *Arśa–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Raktaja*
(E) *Sannipātaja*
(F) *Saṁsargaja*

2. *Śoṣa–* (A) *Ati strī prasaṅgaja*
(B) *Śokaja*
(C) *Vraṇaja*
(D) *Adhva-śramaja*
(E) *Ati vyāyāmaja*
(F) *Jarājanyaja*

3. *Svarabheda–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Medoja*
(E) *Sannipātaja*
(F) *Kṣayaja*

4. *Tṛṣṇā–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Upasargaja*
(F) *Kṣayaja*

5. *Unmāda–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Viṣaja*
(F) *Mānasika dukhaja*

6. *Vidradhi–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Raktaja*
(F) *Kṣataja*

Diseases having 7 sub types.

1. *Atisāra–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Śokātisāra*
(F) *Bhayātisāra*
(G) *Āmātisāra*

2. *Chardi–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Kṛmija*
(F) *Gṛṇajanya*
(G) *Garbhavati strījanya*

3. *Meda–* (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Raktaja*
(F) *Madhyaja*
(G) *Viṣaja*

4. *Dāha–* (A) *Raktapittaja*

(B) *Raktaja*
(C) *Tṛṣṇajanya*
(D) *Pittaja*
(E) *Dhātukṣayaja*
(F) *Marmāghāta*
(G) *Raktapūrṇa udara*

Diseases having 8 types.

1. *Śūla*– (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Vāta-pittaja*
(E) *Vāta-kaphaja*
(F) *Kapha-pittaja*
(G) *Sannipātaja*
(H) *Āmaśūla*

2. *Parināma śūla*– **Like *śūla***

3. *Gulma roga*– (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Vāta-pittaja*
(E) *Vāta-kaphaja*
(F) *Kapha-pittaja*
(G) *Sannipātaja*
(H) *Raktaja*

4. *Mūtrakṛcchra*– (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Sannipātaja*
(E) *Śukra kṛcchra*
(F) *Viṭ kṛcchra*
(G) *Ghāta kṛcchra*
(H) *Āśmari kṛcchra*

5. *Bhagandara*– (A) *Śataponaka*
(B) *Uṣṭragrīvā*
(C) *Parisrāvi*
(D) *Ṛju*
(E) *Parikṣepi*
(F) *Arśajanya*
(G) *Unmārgi*
(H) *Śankhāvarta*

6. *Vātarakta*– (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Tridoṣaja*
(E) *Raktaja*
(F) *Vāta-pittaja*
(G) *Vāta-kaphaja*
(H) *Kapha-pittaja*

Diseases having 9 sub types.

1. *Śotha roga*– (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Vāta-pittaja*
(E) *Vāta-kaphaja*
(F) *Kapha-pittaja*
(G) *Sannipātaja*
(H) *Ābhighātaja*
(I) *Viṣaja*

2. *Granthi*– (A) *Vātaja*
(B) *Pittaja*
(C) *Kaphaja*
(D) *Raktaja*
(E) *Sirā vikṛtijanya*
(F) *Medoja*
(G) *Vṛaṇaja*
(H) *Āsthi vikritijanya*
(I) *Māmsaja granthi*

ICD Classification

WHO's new International Classification of Diseases (ICD-11) comes into effect with the latest updates. The ICD provides a common language that allows health professionals to share standardized information across the world. It is the foundation for identifying health trends and statistics worldwide, containing around 17 000 unique codes for injuries, diseases and causes of death, underpinned by more than 120 000 codable terms. By using code combinations, more than 1.6 million clinical situations can now be coded. These updates reflect recent progress in medicine and advances in scientific understanding. For example, codes relating to antimicrobial resistance are now aligned with the Global Antimicrobial Resistance Surveillance System (GLASS). In addition to coding and capability updates, ICD-11 includes new chapters on traditional medicine, sexual health, and gaming disorder – which has now been added to the section on addictive disorders.

International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10)-WHO Version for; 2016

Chapter I : Certain infectious and parasitic diseases (A00-B99)

Incl.

- Diseases generally recognized as communicable or transmissible
- Use additional code (U82-U84), if desired, to identify resistance to antimicrobial drugs

Excl.

- Carrier or suspected carrier of infectious disease (Z22.)
- Certain localized infections - see body system-related chapters
- Infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium (except obstetrical tetanus) (O98.-)
- Infectious and parasitic diseases specific to the perinatal period [except tetanus neonatorum, congenital syphilis, perinatal gonococcal infection and perinatal human immunodeficiency virus (HIV) disease] (P35-P39)
- Influenza and other acute respiratory infections (J00-J22)

This chapter contains the following blocks:

- A00-A09 Intestinal infectious diseases
- A15-A19 Tuberculosis
- A20-A28 Certain zoonotic bacterial diseases
- A30-A49 Other bacterial diseases
- A50-A64 Infections with a predominantly sexual mode of transmission
- A65-A69 Other spirochaetal diseases
- A70-A74 Other diseases caused by chlamydiae
- A75-A79 Rickettsioses
- A80-A89 Viral infections of the central nervous system
- A92-A99 Arthropod-borne viral fevers and viral haemorrhagic fevers
- B00-B09 Viral infections characterized by skin and mucous membrane lesions
- B15-B19 Viral hepatitis
- B20-B24 Human immunodeficiency virus [HIV] disease
- B25-B34 Other viral diseases
- B35-B49 Mycoses
- B50-B64 Protozoal diseases
- B65-B83 Helminthiases
- B85-B89 Pediculosis, acariasis and other infestations
- B90-B94 Sequelae of infectious and parasitic diseases
- B95-B98 Bacterial, viral and other infectious agents
- B99-B99 Other infectious diseases

Chapter II : Neoplasms (C00-D48)

This chapter contains the following blocks:

- C00-C97 Malignant neoplasms
- C00-C75 Malignant neoplasms, stated or presumed to be primary, of specified sites, except of lymphoid, haematopoietic and related tissue
- C00-C14 Malignant neoplasms of lip, oral cavity and pharynx
- C15-C26 Malignant neoplasms of digestive organs
- C30-C39 Malignant neoplasms of respiratory and intrathoracic organs
- C40-C41 Malignant neoplasms of bone and articular cartilage
- C43-C44 Melanoma and other malignant neoplasms of skin
- C45-C49 Malignant neoplasms of mesothelial and soft tissue
- C50-C50 Malignant neoplasm of breast
- C51-C58 Malignant neoplasms of female genital organs
- C60-C63 Malignant neoplasms of male genital organs
- C64-C68Malignant neoplasms of urinary tract

- C69-C72 Malignant neoplasms of eye, brain and other parts of central nervous system
- C73-C75 Malignant neoplasms of thyroid and other endocrine glands
- C76-C80 Malignant neoplasms of ill-defined, secondary and unspecified sites
- C81-C96 Malignant neoplasms, stated or presumed to be primary, of lymphoid, haematopoietic and related tissue
- C97-C97 Malignant neoplasms of independent (primary) multiple sites
- D00-D09 In situ neoplasms
- D10-D36 Benign neoplasms
- D37-D48 Neoplasms of uncertain or unknown behaviour

Notes

1. Primary, ill-defined, secondary and unspecified sites of malignant neoplasm : Categories C76"C80 include malignant neoplasms for which there is no clear indication of the original site of the cancer or the cancer is stated to be 'disseminated', 'scattered' or 'spread' without mention of the primary site. In both cases the primary site is considered to be unknown.

2. Functional activity : All neoplasms are classified in this chapter, whether they are functionally active or not. An additional code from Chapter IV may be used, if desired, to identify functional activity associated with any neoplasm. For example, catecholamine-producing malignant phaeochromocytoma of adrenal gland should be coded to C74 with additional code E27.5; basophil adenoma of pituitary gland with Cushing syndrome should be coded to D35.2 with additional code E24.0.

3. Morphology : There are a number of major morphological (histological) groups of malignant neoplasms: carcinomas including squamous (cell) and adenocarcinomas; sarcomas; other soft tissue tumours including mesotheliomas; lymphomas (Hodgkin and non-Hodgkin); leukaemia; other specified and site-specific types; and unspecified cancers. Cancer is a generic term and may be used for any of the above groups, although it is rarely applied to the malignant neoplasms of lymphatic, haematopoietic and related tissue. 'Carcinoma' is sometimes used incorrectly as a synonym for 'cancer'.

In Chapter II neoplasms are classified predominantly by site within broad groupings for behaviour. In a few exceptional cases morphology is indicated in the category and subcategory titles.

For those wishing to identify the histological type of neoplasm, comprehensive separate morphology codes are provided (see section Morphology of neoplasms). These morphology codes are derived from the second edition of International Classification of Diseases for Oncology (ICDO), which is a dual-axis classification providing independent coding systems for topography and morphology. Morphology codes have six digits: the first four digits identify the histological type; the fifth digit is the behaviour code (malignant primary, malignant secondary (metastatic), in situ, benign, uncertain whether malignant or benign); and the sixth digit is a grading code (differentiation) for solid tumours, and is also used as a special code for lymphomas and leukaemias.

4. Use of subcategories in Chapter II : Attention is drawn to the special use of subcategory .8 in this chapter [see note 5]. Where it has been necessary to provide subcategories for 'other', these have generally been designated as subcategory .7.

5. Malignant neoplasms overlapping site boundaries and the use of subcategory .8 (overlapping lesion) : Categories C00"C75 classify primary malignant neoplasms according to their point of origin. Many three-character categories are further divided into named parts or subcategories of the organ in question. A neoplasm that overlaps two or more contiguous sites within a three-character category and whose point of origin cannot be determined should be classified to the subcategory .8 ("overlapping lesion"), unless the combination is specifically indexed elsewhere. For example, carcinoma of oesophagus and stomach is specifically indexed to C16.0 (cardia), while carcinoma of the tip and ventral surface of the tongue should be assigned to C02.8. On the other hand, carcinoma of the tip of the tongue extending to involve the ventral surface should be coded to C02.1 as the point of origin, the tip, is known. 'Overlapping' implies that the sites involved are contiguous (next to each other). Numerically consecutive subcategories are frequently anatomically contiguous, but this is not invariably so (e.g. bladder C67.") and the coder may need to consult anatomical texts to determine the topographical relationships.

Sometimes a neoplasm overlaps the boundaries of three-character categories within certain systems. To take care of this the following subcategories have been designated:

- C02.8 Overlapping lesion of tongue
- C08.8 Overlapping lesion of major salivary glands
- C14.8 Overlapping lesion of lip, oral cavity and pharynx
- C21.8 Overlapping lesion of rectum, anus and anal canal
- C24.8 Overlapping lesion of biliary tract
- C26.8 Overlapping lesion of digestive system
- C39.8 Overlapping lesion of respiratory and intrathoracic organs
- C41.8 Overlapping lesion of bone and articular cartilage
- C49.8 Overlapping lesion of connective and soft tissue
- C57.8 Overlapping lesion of female genital organs
- C63.8 Overlapping lesion of male genital organs
- C68.8 Overlapping lesion of urinary organs
- C72.8 Overlapping lesion of central nervous system

An example of this is a carcinoma of the stomach and small intestine, which should be coded to C26.8 (Overlapping lesion of digestive system).

6. Malignant neoplasms of ectopic tissue : Malignant neoplasms of ectopic tissue are to be coded to the site where they are found, e.g. ectopic pancreatic malignant neoplasms of ovary are coded to ovary (C56).

7. Use of the Alphabetical Index in coding neoplasms : In addition to site, morphology and behaviour must also be taken into consideration when coding neoplasms, and reference should always be made first to the Alphabetical Index entry for the morphological description.

The introductory pages of Volume 3 include general instructions about the correct use of the Alphabetical Index. The specific instructions and examples pertaining to neoplasms should be consulted to ensure correct use of the categories and subcategories in Chapter II.

8. Use of the second edition of International Classification of Diseases for Oncology (ICD-O) : For certain morphological types, Chapter II provides a rather restricted topographical classification, or none at all. The topography codes of ICD-O use for all neoplasms essentially the same three- and four-character categories that Chapter II uses for malignant neoplasms (C00"C77, C80), thus providing increased specificity of site for other neoplasms (malignant secondary (metastatic), benign, in situ and uncertain or unknown).

It is therefore recommended that agencies interested in identifying both the site and morphology of tumours, e.g. cancer registries, cancer hospitals, pathology departments and other agencies specializing in cancer, use ICD-O.

Chapter III : Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)

Excl.

- Autoimmune disease (systemic) NOS (M35.9)
- Certain conditions originating in the perinatal period (P00-P96)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)

- Human immunodeficiency virus [HIV] disease (B20-B24)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks:

- D50-D53 Nutritional anaemias
- D55-D59 Haemolytic anaemias
- D60-D64 Aplastic and other anaemias
- D65-D69 Coagulation defects, purpura and other haemorrhagic conditions
- D70-D77 Other diseases of blood and blood-forming organs
- D80-D89 Certain disorders involving the immune mechanism

Asterisk categories for this chapter are provided as follows:

- D63*Anaemia in chronic diseases classified elsewhere
- D77*Other disorders of blood and blood-forming organs in diseases classified elsewhere

Chapter IV : Endocrine, nutritional and metabolic diseases (E00-E90)

Note: All neoplasms, whether functionally active or not, are classified in Chapter II. Appropriate codes in this chapter (i.e. E05.8, E07.0, E16-E31, E34.-) may be used, if desired, as additional codes to indicate either functional activity by neoplasms and ectopic endocrine tissue or hyperfunction and hypofunction of endocrine glands associated with neoplasms and other conditions classified elsewhere.

Excl.

- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
- transitory endocrine and metabolic disorders specific to fetus and newborn (P70-P74)

This chapter contains the following blocks:

- E00-E07 Disorders of thyroid gland
- E10-E14 Diabetes mellitus
- E15-E16 Other disorders of glucose regulation and pancreatic internal secretion
- E20-E35 Disorders of other endocrine glands
- E40-E46 Malnutrition
- E50-E64 Other nutritional deficiencies
- E65-E68 Obesity and other hyperalimentation
- E70-E90 Metabolic disorders

Asterisk categories for this chapter are provided as follows:

- E35*Disorders of endocrine glands in diseases classified elsewhere
- E90*Nutritional and metabolic disorders in diseases classified elsewhere

Chapter V : Mental and behavioural disorders (F00-F99)

Incl.

- Disorders of psychological development

Excl.

- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks :

- F00-F09 Organic, including symptomatic, mental disorders
- F10-F19 Mental and behavioural disorders due to psychoactive substance use
- F20-F29 Schizophrenia, schizotypal and delusional disorders
- F30-F39 Mood [affective] disorders
- F40-F48 Neurotic, stress-related and somatoform disorders
- F50-F59 Behavioural syndromes associated with physiological disturbances and physical factors
- F60-F69 Disorders of adult personality and behaviour

- F70-F79 Mental retardation
- F80-F89 Disorders of psychological development
- F90-F98 Behavioural and emotional disorders with onset usually occurring in childhood and adolescence
- F99-F99 Unspecified mental disorder

Asterisk categories for this chapter are provided as follows:

- F00* Dementia in Alzheimer disease
- F02* Dementia in other diseases classified elsewhere

Chapter VI : Diseases of the nervous system (G00-G99)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks :

- G00-G09 Inflammatory diseases of the central nervous system
- G10-G14 Systemic atrophies primarily affecting the central nervous system
- G20-G26 Extrapyramidal and movement disorders
- G30-G32 Other degenerative diseases of the nervous system
- G35-G37 Demyelinating diseases of the central nervous system
- G40-G47 Episodic and paroxysmal disorders
- G50-G59 Nerve, nerve root and plexus disorders
- G60-G64 Polyneuropathies and other disorders of the peripheral nervous system
- G70-G73 Diseases of myoneural junction and muscle
- G80-G83 Cerebral palsy and other paralytic syndromes
- G90-G99 Other disorders of the nervous system

Asterisk categories for this chapter are provided as follows:

- G01* Meningitis in bacterial diseases classified elsewhere
- G02* Meningitis in other infectious and parasitic diseases classified elsewhere
- G05* Encephalitis, myelitis and encephalomyelitis in diseases classified elsewhere
- G07* Intracranial and intraspinal abscess and granuloma in diseases classified elsewhere
- G13* Systemic atrophies primarily affecting central nervous system in diseases classified elsewhere
- G22* Parkinsonism in diseases classified elsewhere
- G26* Extrapyramidal and movement disorders in diseases classified elsewhere
- G32* Other degenerative disorders of nervous system in diseases classified elsewhere
- G46* Vascular syndromes of brain in cerebrovascular diseases
- G53* Cranial nerve disorders in diseases classified elsewhere
- G55* Nerve root and plexus compressions in diseases classified elsewhere
- G59* Mononeuropathy in diseases classified elsewhere
- G63* Polyneuropathy in diseases classified elsewhere
- G73* Disorders of myoneural junction and muscle in diseases classified elsewhere

- G94* Other disorders of brain in diseases classified elsewhere
- G99* Other disorders of nervous system in diseases classified elsewhere

Chapter VII : Diseases of the eye and adnexa (H00-H59)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks:

- H00-H06 Disorders of eyelid, lacrimal system and orbit
- H10-H13 Disorders of conjunctiva
- H15-H22 Disorders of sclera, cornea, iris and ciliary body
- H25-H28 Disorders of lens
- H30-H36 Disorders of choroid and retina
- H40-H42 Glaucoma
- H43-H45 Disorders of vitreous body and globe
- H46-H48 Disorders of optic nerve and visual pathways
- H49-H52 Disorders of ocular muscles, binocular movement, accommodation and refraction
- H53-H54 Visual disturbances and blindness
- H55-H59 Other disorders of eye and adnexa

Asterisk categories for this chapter are provided as follows:

- H03* Disorders of eyelid in diseases classified elsewhere
- H06* Disorders of lacrimal system and orbit in diseases classified elsewhere
- H13* Disorders of conjunctiva in diseases classified elsewhere
- H19* Disorders of sclera and cornea in diseases classified elsewhere
- H22* Disorders of iris and ciliary body in diseases classified elsewhere
- H28* Cataract and other disorders of lens in diseases classified elsewhere
- H32* Chorioretinal disorders in diseases classified elsewhere
- H36* Retinal disorders in diseases classified elsewhere
- H42* Glaucoma in diseases classified elsewhere
- H45* Disorders of vitreous body and globe in diseases classified elsewhere
- H48* Disorders of optic [2nd] nerve and visual pathways in diseases classified elsewhere
- H58* Other disorders of eye and adnexa in diseases classified elsewhere

Chapter VIII : Diseases of the ear and mastoid process (H60-H95)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks :

- H60-H62 Diseases of external ear
- H65-H75 Diseases of middle ear and mastoid
- H80-H83 Diseases of inner ear
- H90-H95 Other disorders of ear

Asterisk categories for this chapter are provided as follows:

- H62*Disorders of external ear in diseases classified elsewhere
- H67*Otitis media in diseases classified elsewhere
- H75*Other disorders of middle ear and mastoid in diseases classified elsewhere
- H82*Vertiginous syndromes in diseases classified elsewhere
- H94*Other disorders of ear in diseases classified elsewhere

Chapter IX : Diseases of the circulatory system (I00-I99)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
- Systemic connective tissue disorders (M30-M36)
- Transient cerebral ischaemic attacks and related syndromes (G45.-)

This chapter contains the following blocks:

- I00-I02 Acute rheumatic fever
- I05-I09 Chronic rheumatic heart diseases
- I10-I15 Hypertensive diseases
- I20-I25 Ischaemic heart diseases
- I26-I28 Pulmonary heart disease and diseases of pulmonary circulation
- I30-I52 Other forms of heart disease
- I60-I69 Cerebrovascular diseases
- I70-I79 Diseases of arteries, arterioles and capillaries
- I80-I89 Diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified
- I95-I99 Other and unspecified disorders of the circulatory system

Asterisk categories for this chapter are provided as follows:

- I32* Pericarditis in diseases classified elsewhere
- I39* Endocarditis and heart valve disorders in diseases classified elsewhere
- I41* Myocarditis in diseases classified elsewhere
- I43* Cardiomyopathy in diseases classified elsewhere
- I52* Other heart disorders in diseases classified elsewhere
- I68* Cerebrovascular disorders in diseases classified elsewhere
- I79* Disorders of arteries, arterioles and capillaries in diseases classified elsewhere
- I98*Other disorders of circulatory system in diseases classified elsewhere

Chapter X : Diseases of the respiratory system (J00-J99)

Note: When a respiratory condition is described as occurring in more than one site and is not specifically indexed, it should be classified to the lower anatomic site (e.g., tracheobronchitis to bronchitis in J40).

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)

- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks :

- J00-J06 Acute upper respiratory infections
- J09-J18 Influenza and pneumonia
- J20-J22 Other acute lower respiratory infections
- J30-J39 Other diseases of upper respiratory tract
- J40-J47 Chronic lower respiratory diseases
- J60-J70 Lung diseases due to external agents
- J80-J84 Other respiratory diseases principally affecting the interstitium
- J85-J86 Suppurative and necrotic conditions of lower respiratory tract
- J90-J94 Other diseases of pleura
- J95-J99 Other diseases of the respiratory system

Asterisk categories for this chapter are provided as follows:

- J17* Pneumonia in diseases classified elsewhere
- J91* Pleural effusion in conditions classified elsewhere
- J99* Respiratory disorders in diseases classified elsewhere

Chapter XI : Diseases of the digestive system (K00-K93)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks :

- K00-K14 Diseases of oral cavity, salivary glands and jaws
- K20-K31 Diseases of oesophagus, stomach and duodenum
- K35-K38 Diseases of appendix
- K40-K46 Hernia
- K50-K52 Noninfective enteritis and colitis
- K55-K64 Other diseases of intestines
- K65-K67 Diseases of peritoneum
- K70-K77 Diseases of liver
- K80-K87 Disorders of gallbladder, biliary tract and pancreas
- K90-K93 Other diseases of the digestive system

Asterisk categories for this chapter are provided as follows:

- K23* Disorders of oesophagus in diseases classified elsewhere
- K67* Disorders of peritoneum in infectious diseases classified elsewhere
- K77* Liver disorders in diseases classified elsewhere
- K87* Disorders of gallbladder, biliary tract and pancreas in diseases classified elsewhere
- K93* Disorders of other digestive organs in diseases classified elsewhere

Chapter XII : Diseases of the skin and subcutaneous tissue (L00-L99)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)

- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Lipomelanotic reticulosis (I89.8)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
- Systemic connective tissue disorders (M30-M36)

This chapter contains the following blocks :

- L00-L08 Infections of the skin and subcutaneous tissue
- L10-L14 Bullous disorders
- L20-L30 Dermatitis and eczema
- L40-L45 Papulosquamous disorders
- L50-L54 Urticaria and erythema
- L55-L59 Radiation-related disorders of the skin and subcutaneous tissue
- L60-L75 Disorders of skin appendages
- L80-L99 Other disorders of the skin and subcutaneous tissue

Asterisk categories for this chapter are provided as follows:

- L14* Bullous disorders in diseases classified elsewhere
- L45* Papulosquamous disorders in diseases classified elsewhere
- L54* Erythema in diseases classified elsewhere
- L62* Nail disorders in diseases classified elsewhere
- L86* Keratoderma in diseases classified elsewhere
- L99* Other disorders of skin and subcutaneous tissue in diseases classified elsewhere

Chapter XIII : Diseases of the musculoskeletal system and connective tissue (M00-M99)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain disorders of the temporomandibular joint (K07.6)
- Certain infectious and parasitic diseases (A00-B99)
- Compartment syndrome (T79.6)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks :

- M00-M25 Arthropathies
- M00-M03 Infectious arthropathies
- M05-M14 Inflammatory polyarthropathies
- M15-M19 Arthrosis
- M20-M25 Other joint disorders
- M30-M36 Systemic connective tissue disorders
- M40-M54 Dorsopathies
- M40-M43 Deforming dorsopathies
- M45-M49 Spondylopathies
- M50-M54 Other dorsopathies
- M60-M79Soft tissue disorders
- M60-M63 Disorders of muscles
- M65-M68 Disorders of synovium and tendon
- M70-M79 Other soft tissue disorders
- M80-M94 Osteopathies and chondropathies
- M80-M85 Disorders of bone density and structure

- M86-M90 Other osteopathies
- M91-M94 Chondropathies
- M95-M99 Other disorders of the musculoskeletal system and connective tissue

Asterisk categories for this chapter are provided as follows:

- M01* Direct infections of joint in infectious and parasitic diseases classified elsewhere
- M03* Postinfective and reactive arthropathies in diseases classified elsewhere
- M07* Psoriatic and enteropathic arthropathies
- M09* Juvenile arthritis in diseases classified elsewhere
- M14* Arthropathies in other diseases classified elsewhere
- M36* Systemic disorders of connective tissue in diseases classified elsewhere
- M49* Spondylopathies in diseases classified elsewhere
- M63* Disorders of muscle in diseases classified elsewhere
- M68* Disorders of synovium and tendon in diseases classified elsewhere
- M73* Soft tissue disorders in diseases classified elsewhere
- M82* Osteoporosis in diseases classified elsewhere
- M90* Osteopathies in diseases classified elsewhere

Site of musculoskeletal involvement

The following subclassification to indicate the site of involvement is provided for optional use with appropriate categories in Chapter XIII. As local extensions or specialty adaptations may vary in the number of characters used, it is suggested that the supplementary site subclassification be placed in an identifiably separate position (e.g. in an additional box). Different sub-classifications for use with derangement of knee, dorsopathies, and biomechanical lesions not elsewhere classified are given at M23, before M40 and at M99 respectively.

- Multiple sites

1 **Shoulder region** : Claviclescapula, Acromioclavicular, Glenohumeral, sternoclavicular, Joints

2 **Upper arm** : Humerusel, Bow joint

3 **Forearm** : Radius, Ulna, Wrist joint

4 **Hand** : Carpus, Fingers, Metacarpus, Joints between these bones

5 **Pelvic region and thigh** : Buttock, Femur, Pelviship (joint), Sacroiliac joint

6 **Lower leg** : Fibula, Knee joint, Tibia

7 **Ankle and foot** : Meta, Tarsus, Tarsus, Toes, Ankle joint, Other joints in foot

8 **Other** : Head, Neck, Ribs, Skull, Trunk, Vertebral column

9 **Site unspecified**

Chapter XIV : Diseases of the genitourinary system (N00-N99)

Excl.

- Certain conditions originating in the perinatal period (P00-P96)
- Certain infectious and parasitic diseases (A00-B99)
- Complications of pregnancy, childbirth and the puerperium (O00-O99)
- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter contains the following blocks:

- N00-N08 Glomerular diseases
- N10-N16 Renal tubulo-interstitial diseases
- N17-N19 Renal failure
- N20-N23 Urolithiasis
- N25-N29 Other disorders of kidney and ureter
- N30-N39 Other diseases of urinary system
- N40-N51 Diseases of male genital organs

- N60-N64 Disorders of breast
- N70-N77 Inflammatory diseases of female pelvic organs
- N80-N98 Noninflammatory disorders of female genital tract
- N99-N99 Other disorders of the genitourinary system

Asterisk categories for this chapter are provided as follows:

- N08* Glomerular disorders in diseases classified elsewhere
- N16* Renal tubulo-interstitial disorders in diseases classified elsewhere
- N22* Calculus of urinary tract in diseases classified elsewhere
- N29* Other disorders of kidney and ureter in diseases classified elsewhere
- N33* Bladder disorders in diseases classified elsewhere
- N37* Urethral disorders in diseases classified elsewhere
- N51* Disorders of male genital organs in diseases classified elsewhere
- N74* Female pelvic inflammatory disorders in diseases classified elsewhere
- N77* Vulvovaginal ulceration and inflammation in diseases classified elsewhere

Chapter XV : Pregnancy, childbirth and the puerperium (O00-O99)

The codes included in this chapter are to be used for conditions related to or aggravated by the pregnancy, childbirth or by the puerperium (maternal causes or obstetric causes)

Excl.

- Certain diseases or injuries complicating pregnancy, childbirth and the puerperium classified elsewhere:
- External causes (for mortality) (V01-Y89)
- Injury, poisoning and certain other consequences of external cause (S00-T88.1,T88.6-T98)
- Mental and behavioural disorders associated with the puerperium (F53.-)
- Obstetrical tetanus (A34)
- Postpartum necrosis of pituitary gland (E23.0)
- Puerperal osteomalacia (M83.0)

Supervision of :

- High-risk pregnancy (Z35.-)
- Normal pregnancy (Z34.-)

This chapter contains the following blocks:

- O00-O08Pregnancy with abortive outcome
- O10-O16Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium
- O20-O29Other maternal disorders predominantly related to pregnancy
- O30-O48Maternal care related to the fetus and amniotic cavity and possible delivery problems
- O60-O75Complications of labour and delivery
- O80-O84Delivery
- O85-O92Complications predominantly related to the puerperium
- O94-O99Other obstetric conditions, not elsewhere classified

Chapter XVI : Certain conditions originating in the perinatal period (P00-P96)

Incl.

- Conditions that have their origin in the perinatal period even though death or morbidity occurs later

Excl.

- Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- Endocrine, nutritional and metabolic diseases (E00-E90)
- Injury, poisoning and certain other consequences of external causes (S00-T98)
- Neoplasms (C00-D48)
- Tetanus neonatorum (A33)

This chapter contains the following blocks:

- P00-P04 Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery
- P05-P08 Disorders related to length of gestation and fetal growth

- P10-P15 Birth trauma
- P20-P29 Respiratory and cardiovascular disorders specific to the perinatal period
- P35-P39 Infections specific to the perinatal period
- P50-P61 Haemorrhagic and haematological disorders of fetus and newborn
- P70-P74 Transitory endocrine and metabolic disorders specific to fetus and newborn
- P75-P78 Digestive system disorders of fetus and newborn
- P80-P83 Conditions involving the integument and temperature regulation of fetus and newborn
- P90-P96 Other disorders originating in the perinatal period

Asterisk categories for this chapter are provided as follows:

- P75*Meconium ileus in cystic fibrosis

Chapter XVII : Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)

Excl.

- Inborn errors of metabolism (E70-E90)

This chapter contains the following blocks:

- Q00-Q07 Congenital malformations of the nervous system
- Q10-Q18 Congenital malformations of eye, ear, face and neck
- Q20-Q28 Congenital malformations of the circulatory system
- Q30-Q34 Congenital malformations of the respiratory system
- Q35-Q37 Cleft lip and cleft palate
- Q38-Q45 Other congenital malformations of the digestive system
- Q50-Q56 Congenital malformations of genital organs
- Q60-Q64 Congenital malformations of the urinary system
- Q65-Q79 Congenital malformations and deformations of the musculoskeletal system
- Q80-Q89 Other congenital malformations
- Q90-Q99 Chromosomal abnormalities, not elsewhere classified

Chapter XVIII : Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This chapter includes symptoms, signs, abnormal results of clinical or other investigative procedures, and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded.

Signs and symptoms that point rather definitely to a given diagnosis have been assigned to a category in other chapters of the classification. In general, categories in this chapter include the less well-defined conditions and symptoms that, without the necessary study of the case to establish a final diagnosis, point perhaps equally to two or more diseases or to two or more systems of the body. Practically all categories in the chapter could be designated 'not otherwise specified', 'unknown etiology' or 'transient'. The Alphabetical Index should be consulted to determine which symptoms and signs are to be allocated here and which to other chapters. The residual subcategories, numbered .8, are generally provided for other relevant symptoms that cannot be allocated elsewhere in the classification.

The conditions and signs or symptoms included in categories R00-R99 consist of:

a. Cases for which no more specific diagnosis can be made even after all the facts bearing on the case have been investigated;
b. Signs or symptoms existing at the time of initial encounter that proved to be transient and whose causes could not be determined;
c. Provisional diagnoses in a patient who failed to return for further investigation or care;
d. Cases referred elsewhere for investigation or treatment before the diagnosis was made;
e. Cases in which a more precise diagnosis was not available for any other reason;
f. Certain symptoms, for which supplementary information is provided, that represent

important problems in medical care in their own right.

Excl.

- Abnormal findings on antenatal screening of mother (O28.-)
- Certain conditions originating in the perinatal period (P00-P96)

This chapter contains the following blocks :

- R00-R09 Symptoms and signs involving the circulatory and respiratory systems
- R10-R19 Symptoms and signs involving the digestive system and abdomen
- R20-R23 Symptoms and signs involving the skin and subcutaneous tissue
- R25-R29 Symptoms and signs involving the nervous and musculoskeletal systems
- R30-R39 Symptoms and signs involving the urinary system
- R40-R46 Symptoms and signs involving cognition, perception, emotional state and behaviour
- R47-R49 Symptoms and signs involving speech and voice
- R50-R69 General symptoms and signs
- R70-R79 Abnormal findings on examination of blood, without diagnosis
- R80-R82 Abnormal findings on examination of urine, without diagnosis
- R83-R89 Abnormal findings on examination of other body fluids, substances and tissues, without diagnosis
- R90-R94 Abnormal findings on diagnostic imaging and in function studies, without diagnosis
- R95-R99Ill-defined and unknown causes of mortality

Chapter XIX : Injury, poisoning and certain other consequences of external causes (S00-T98)

Excl.

- Birth trauma (P10-P15)
- Obstetric trauma (O70-O71)
- Malunion of fracture (M84.0)
- Nonunion of fracture [pseudarthrosis] (M84.1)
- Pathological fracture (M84.4)
- Pathological fracture with osteoporosis (M80.)
- Stress fracture (M84.3)

This chapter contains the following blocks :

- S00-S09 Injuries to the head
- S10-S19 Injuries to the neck
- S20-S29 Injuries to the thorax
- S30-S39 Injuries to the abdomen, lower back, lumbar spine and pelvis
- S40-S49 Injuries to the shoulder and upper arm
- S50-S59 Injuries to the elbow and forearm
- S60-S69 Injuries to the wrist and hand
- S70-S79 Injuries to the hip and thigh
- S80-S89 Injuries to the knee and lower leg
- S90-S99 Injuries to the ankle and foot
- T00-T07 Injuries involving multiple body regions
- T08-T14 Injuries to unspecified part of trunk, limb or body region
- T15-T19 Effects of foreign body entering through natural orifice
- T20-T32 Burns and corrosions
- T20-T25 Burns and corrosions of external body surface, specified by site
- T26-T28 Burns and corrosions confined to eye and internal organs
- T29-T32 Burns and corrosions of multiple and unspecified body regions
- T33-T35 Frostbite
- T36-T50 Poisoning by drugs, medicaments and biological substances
- T51-T65 Toxic effects of substances chiefly nonmedicinal as to source
- T66-T78 Other and unspecified effects of external causes
- T79-T79 Certain early complications of trauma
- T80-T88 Complications of surgical and medical care, not elsewhere classified
- T90-T98 Sequelae of injuries, of poisoning and of other consequences of external causes

The chapter uses the S-section for coding different types of injuries related to single body regions and the T-section to cover injuries to multiple or unspecified body regions as well as poisoning and certain other consequences of external causes.

Where multiple sites of injury are specified in the titles, the word "with" indicates involvement of both sites, and the word "and" indicates involvement of either or both sites.

The principle of multiple coding of injuries should be followed wherever possible. Combination categories for multiple injuries are provided for use when there is insufficient detail as to the nature of the individual conditions, or for primary tabulation purposes when it is more convenient to record a single code; otherwise, the component injuries should be coded separately. Reference should also be made to the morbidity or mortality coding rules and guidelines in Volume 2.

The blocks of the S-section as well as T00-T14 and T90-T98 contain injuries at the three-character level classified by type as follows:

Superficial injury including:

- Abrasion
- Blister (nonthermal)
- Contusion, including bruise and haematoma
- Injury from superficial foreign body (splinter) without major open wound
- Insect bite (nonvenomous)

Open wound including :

- Animal bite
- Laceration
- NOS
- Cut
- puncture wound:
- With (penetrating) foreign body

Fracture including:

Fracture:

Closed:

- Comminuted
- Depressed
- Elevated
- Fissured
- Greenstick With or without delayed healing
- *Impacted*
- *Simple*
- *Spiral*
- *Displaced*
- *Linear*
- *Slipped epiphysis*
- *Dislocated*

Fracture:

Open:

- Compound
- Infected
- Missile With or without delayed healing
- Puncture
- With foreign body

Excl.

Fracture:

- Pathological (M84.4)
- With osteoporosis (M80.-)
- Stress (M84.3)
- Malunion of fracture (M84.0)
- Nonunion of fracture [pseudoarthrosis] (M84.1)

Dislocation, sprain and strain

Including:

- Avulsion
- Sprain
- Laceration
- Strain

Traumatic:

- Haemarthrosis
- Subluxation
- Rupture
- Tear of cartilagejoint (capsule) ligament

Injury to nerves and spinal cord Including:

- Complete or incomplete lesion of spinal cord
- Lesion in continuity of nerves and spinal cord

Traumatic:

- Division of nerve
- Paralysis (transient)
- Quadriplegia
- Haematomyelia
- Paraplegia

Injury to blood vesselsin cluding:

Avulsioncutlacerationtraumatic:

- Aneurysm or fistula (arteriovenous)
- Arterial haematoma
- Rupture of blood vessels

Injury to muscle, fascia and tendon including: Avulsioncutlacerationstraintraumatic rupture of muscle, fascia and tendon

Crushing injury Traumatic amputation Injury to internal organs including:

Blast injuries, Bruise, Concussion injuries, Crushing, Laceration, Traumatic:

- Haematoma
- Puncture
- Rupture
- Tear of internal organs

Other and unspecified injuries

Chapter XX : External causes of morbidity and mortality (V01-Y98)

This chapter, which in previous revisions of ICD constituted a supplementary classification, permits the classification of environmental events and circumstances as the cause of injury, poisoning and other adverse effects. Where a code from this section is applicable, it is intended that it shall be used in addition to a code from another chapter of the Classification indicating the nature of the condition. Most often, the condition will be classifiable to Chapter XIX, Injury, poisoning and certain other consequences of external causes (S00-T98). Causes of death should preferably be tabulated according to both Chapter XIX and Chapter XX, but if only one code is tabulated then the code from Chapter XX should be used in preference. Other conditions that may be stated to be due to external causes are classified in Chapters I to XVIII. For these conditions, codes from Chapter XX should be used to provide additional information for multiple-condition analysis only.

Categories for sequelae of external causes of morbidity and mortality are included at Y85-Y89.

This chapter contains the following blocks:

- V01-X59 Accidents
- V01-V99 Transport accidents
- V01-V09 Pedestrian injured in transport accident
- V10-V19 Pedal cyclist injured in transport accident
- V20-V29 Motorcycle rider injured in transport accident
- V30-V39 Occupant of three-wheeled motor vehicle injured in transport accident
- V40-V49 Car occupant injured in transport accident
- V50-V59 Occupant of pick-up truck or van injured in transport accident
- V60-V69 Occupant of heavy transport vehicle injured in transport accident
- V70-V79 Bus occupant injured in transport accident
- V80-V89 Other land transport accidents
- V90-V94 Water transport accidents
- V95-V97 Air and space transport accidents
- V98-V99 Other and unspecified transport accidents
- W00-X59 Other external causes of accidental injury
- W00-W19 Falls
- W20-W49 Exposure to inanimate mechanical forces
- W50-W64 Exposure to animate mechanical forces
- W65-W74 Accidental drowning and submersion
- W75-W84 Other accidental threats to breathing
- W85-W99 Exposure to electric current, radiation and extreme ambient air temperature and pressure
- X00-X09 Exposure to smoke, fire and flames
- X10-X19 Contact with heat and hot substances
- X20-X29 Contact with venomous animals and plants
- X30-X39 Exposure to forces of nature
- X40-X49 Accidental poisoning by and exposure to noxious substances
- X50-X57 Overexertion, travel and privation
- X58-X59 Accidental exposure to other and unspecified factors
- X60-X84 Intentional self-harm
- X85-Y09 Assault
- Y10-Y34 Event of undetermined intent
- Y35-Y36 Legal intervention and operations of war
- Y40-Y84 Complications of medical and surgical care

- Y40-Y59Drugs, medicaments and biological substances causing adverse effects in therapeutic use
- Y60-Y69 Misadventures to patients during surgical and medical care
- Y70-Y82Medical devices associated with adverse incidents in diagnostic and therapeutic use
- Y83-Y84Surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure
- Y85-Y89Sequelae of external causes of morbidity and mortality
- Y90-Y98Supplementary factors related to causes of morbidity and mortality classified elsewhere

Place of occurrence code

The following categories are provided to to be used as separate variables in addition to ICD categories W00-Y34 to identify the place of occurrence of the external cause where relevant:

0 Home

Apartment
Boarding-house
Caravan [trailer] park, residential
Farmhouse
Home premises
House (residential)
Noninstitutional place of residence
Private:

- Driveway to home
- Garage
- Garden to home
- Yard to home

Swimming-pool in private house or garden

Excl.: Abandoned or derelict house 8
Home under construction but not yet occupied 6
Institutional place of residence1

1 Residential institution : Children's home, Dormitory, Home for the sick, Hospice, Military camp, Nursing home, Old people's home, Orphanage, Pensioner's home, Prison, Reform school

2 School, other institution and public administrative area

Building (including adjacent grounds) used by the general public or by a particular group of the public such as:

- assembly hall
- campus
- church
- cinema
- clubhouse
- college
- court-house
- dancehall
- day nursery
- gallery
- hospital
- institute for higher education
- kindergarten
- library
- movie-house
- museum
- music-hall
- opera-house
- post office
- public hall
- school (private) (public)(state)
- theatre
- university
- youth centre

Excl.: Building under construction 6
Residential institution 1
Sports and athletics area 3

3 Sports and athletics area

- Baseball field
- Basketball-court
- Cricket ground
- Football field
- Golf-course
- Gymnasium
- Hockey field
- Riding-school
- Skating-rink
- Squash-court
- Stadium
- Swimming-pool, public
- Tennis-court

Excl.: Swimming-pool or tennis-court in private home or garden0

4 Street and highway : Freeway, Motorway, Pavement, Road, Sidewalk

5 Trade and service area

Airport	Bank	Cafe
Casino	Garage (commercial)	Gas station
Hotel	Market	Office building
Petrol station	Radio or television station	Restaurant

Service station	Shop (commercial)	Shopping mall
Station (bus) (railway) Warehouse	Store	Supermarket

Excl.: garage in private home0

6 Industrial and construction area

Building [any] under construction
Factory
Building
Gasworks
Mine
Pit (coal) (gravel)
Shipyard (sand)
Workshop

Dockyard Dry dock
Premises
Industrial yard
Oil rig and other offshore installations
Power-station (coal) (nuclear) (oil)
Tunnel under construction

7 Farm

Farm: • buildings • land under cultivation
Ranch

Excl.: farmhouse and home premises of farm

8 Other specified places

Beach	Campsite	Canal	Caravan site NOS
Derelict house	Desert	Dock NOS	Forest
Harbour	HillLake	Marsh	Military training ground
Mountain	Park (amusement) (public)	Parking-lot and parking -place	
Pond or pool	Prairie	Public place NOS	
Railway line	River	Sea	Seashore
Stream	Swamp	Water reservoir	Zoo

9 Unspecified place

Activity code : The following categories are provided to be used as separate variables in addition to categories V01-Y34 to indicate the activity of the injured person at the time the event occurred. This supplementary classification should not be confused with, or be used instead of, the recommended categories provided to indicate the place of occurrence of events classifiable to W00-Y34.

10 While engaged in sports activity

Physical exercise with a described functional element such as:

- golf
- school athletics
- trekking
- jogging
- skiing
- water-skiing
- riding
- swimming

1 **While engaged in leisure activity :** Hobby activitiesLeisure-time activities with an entertainment element such as going to the cinema, to a dance or to a partyParticipation in sessions and activities of voluntary organizations*Excl.:*sports activities0

2 **While working for income :** Paid work (manual) (professional)
Transportation (time) to and from such activities
Work for salary, bonus and other types of income

3 **While engaged in other types of work**
Domestic duties such as:

- caring for children and relatives
- cleaning
- cooking
- gardening
- household maintenance

Duties for which one would not normally gain an income
Learning activities, e.g. attending school session or lesson
Undergoing education

4 **While resting, sleeping, eating or engaging in other vital activities :** Personal hygiene

8 While engaged in other specified activities

9 During unspecified activity

Chapter XXI : Factors influencing health status and contact with health services Z00-Z99)

Note: This chapter should not be used for international comparison or for primary mortality coding.

Categories Z00-Z99 are provided for occasions when circumstances other than a disease, injury or external cause classifiable to categories A00-Y89 are recorded as "diagnoses" or "problems". This can arise in two main ways:

a. When a person who may or may not be sick encounters the health services for some specific purpose, such as to receive limited care or service for a current condition, to donate an organ or tissue, to receive prophylactic vaccination or to discuss a problem which is in itself not a disease or injury.
b. When some circumstance or problem is present which influences the person's health status but is not in itself a current illness or injury. Such factors may be elicited during population surveys, when the person may or may not be currently sick, or be recorded as an additional factor to be borne in mind when the person is receiving care for some illness or injury.

This chapter contains the following blocks:

- Z00-Z13 Persons encountering health services for examination and investigation
- Z20-Z29 Persons with potential health hazards related to communicable diseases
- Z30-Z39 Persons encountering health services in circumstances related to reproduction
- Z40-Z54 Persons encountering health services for specific procedures and health care
- Z55-Z65 Persons with potential health hazards related to socioeconomic and psychosocial circumstances
- Z70-Z76 Persons encountering health services in other circumstances
- Z80-Z99 Persons with potential health hazards related to family and personal history and certain conditions influencing health status

Chapter XXII : Codes for special purposes (U00-U85)

This chapter contains the following blocks:

- U00-U49 Provisional assignment of new diseases of uncertain etiology or emergency use
- U82-U85 Resistance to antimicrobial and antineoplastic drugs

CHAPTER

17

Ashtanindita Puruṣa (Endocrine disorders)

Prof. Parameswarappa S. Byadgi and Dr. Ramanand Tiwari

इह खलु शरीरमधिकृत्याष्टौ पुरुषा निन्दिता भवन्ति; तद्यथा अतिदीर्घश्च, अतिह्रस्वश्च, अतिलोमाच्च, अलोमा च, अतिकृष्णश्च, अतिगौरश्च, अतिस्थूलश्च अतिकृशश्चेति ।
C.Su 21/3

Asṭa nindita refers to one who is despicable in relation to principles of treatment. Out of eight *Caraka* explained only two i.e. *sthaulya* and *kṛśa* indetail. It may be due to wide variation of treatment principles in these individuals. In case of other remaining six, there may not be much antagonistic to general principle of treatment.

निन्दितत्वं न दृश्यत्वेन कुत्सितत्वम्, आकृतिसौष्ठवादतिदीर्घादीनामपि सौन्दर्यात् । किन्तु क्रियाविशेषोऽसाधुत्वम् । तया सत्यतिदीर्घादीनां षण्णां कुत्रचित् । क्रियाविशेषेऽसाधुत्वेनानतिनिन्दितत्वात् तद् षण्णं नोक्तं तदुन्नेयम् । *C.Su. 21/2 (Gaṅgādhara)*

Nindita word here refers to person who is not suitable for general principle of treatment. *Atidīrgha* (tall) person may be handsome and beautiful in terms of look, but he is not appropriate person for general principles of treatment. That's why it is included under *aṣṭanindita.*

1. अतिदीर्घ (*Atidīrgha*)–Too tall
2. अतिह्रस्व (*Atihṛsva*)–Too short
3. अतिलोमा (*Ati lomā*)–Over hairy
4. अलोमा (*Aloma*)–Hairless
5. अतिकृष्ण (*Ati kṛsṇa*)–Too black
6. अतिगौर (*Ati gaura*)–Too fair
7. अतिस्थूल (*Ati sthūla*)–Over obese
8. अतिकृश (*Ati kṛśa*)–Over emaciation.

Gaṅgādhara included 3 more i.e.

शरीरनिन्दाधिकाराश्चोक्ताः कुब्जकाणभङ्गुरादयश्चैकदेशनिन्दितत्वान्नोक्ताः । *C.Su 21/02 (Gaṅgādhara)*

9. कुब्ज (*Kubja*) – Hump backed
10. काण (*Kāṇa*) – One eyed
11. भङ्गुरा (*Bhaṅgurā*) – Crooked o-bent

अतिस्थूल (Atisthūla)

Causative Factors

तदतिस्थौल्यमतिसंपूरणाद्गुरुमधुर शीतस्निग्धोपयोगादव्यायामादव्यवायाद्दिवास्वप्नाद्धर्षनित्यत्वाद चिन्तनाद्बीजस्वभावाच्चोपजायते । *C.Su 21/4*

- Over saturation or excessive intake of food
- Intake of heavy, sweet, cold and fatty diet
- Lack of physical exercises
- Abstinence from sexual intercourse
- Sleeping during day time
- Exhilaration or excessive cheerfulness
- Lack of mental exercise
- Genetic defect or hereditary one

अष्टस्थौल्य दोष (Eight fold abnormalities of obese person)

अतिस्थूलस्य तावदायुषो ह्रासो जवोपरोधः कृच्छ्रव्यवायता दौर्बल्यं दौर्गन्ध्यं स्वेदाबाधः क्षुदतिमात्रं पिपासतियोगश्चेति भवन्त्यष्टौ दोषाः । *C.Su 21/4*

- Shortening of life span
- Deranged movement or sluggish movement
- Difficulty in sexual intercourse
- General debility
- Foul smell from the body
- Excessive sweating
- Increased appetite
- Excessive thirst

Pathogenesis of Eight Fold Doṣās of Sthūla Person

आयुषो ह्रासः [(Āyuṣo Hṛāsaḥ) – Diminution of longevity]

तस्य ह्यतिमात्रमेदस्विनो मेद एवोपचीयते न तथेतरे धातवः तस्मादायुषो ह्रासः । *C.Su 21/4*

Except *medadhātu* other *dhātus* do not grow uniformly, as a result of which longevity diminishes.

जवोपरोधः [(Javoparodhaḥ) – Deranged movement]

शैथिल्यात् सौकुमार्याद्गुरुत्वाच्च मेदसो जवोपरोधः ।
C.Su 21/4

Sluggish or deranged movements is due to looseness, tenderness and heaviness of *meda.*

कृच्छ्रव्यवायता (Difficulty in sexual intercourse)

शुक्रबहुत्वान्मेदसाऽऽवृतमार्गत्वाच्च कृच्छ्रव्यवायता ।
C.Su 21/4

Difficulty in sexual intercourse is due to inadequate semen along with obstruction to its normal path by *meda.*

दौर्बल्यं (General debility)

दौर्बल्यमसमत्वाद्धातूनां । *C.Su 21/4*

General debility is due to inadequate *dhātus.*

दौर्गन्ध्य (Foul smell from the body)

दौर्गन्ध्यं मेदोदोषान्मेदसः स्वभावात् स्वेदनत्वाच्च ।
C.Su 21/4

Foul smell from the body is due to inherent defect in *medas* and general nature of *meda* followed by excessive salivation.

स्वेदाबाधः (Excessive perspiration)

मेदसः श्लेष्मसंसर्गाद्विष्यन्दित्वाद्बहुत्वाद गुरुत्वाद्व्यायामसहत्वाच्च स्वेदाबाधः । *C.Su 21/4*

When *meda* is associated with *kapha,* which is fluid, multitudinous and heavy and it cannot withstand physical exercise leading to excessive sweating.

क्षुदतिमात्रं (Excessive appetite) & पिपासाति योग (Excessive thirst)

तीक्ष्णाग्नित्वात् प्रभूतकोष्ठवायुत्वाच्च क्षुदतिमात्रं पिपासतियोगश्चेति । *(C.Su 21/4)*

Excessive appetite and thirst is due to enhanced digestive fire along with excess presence of *vāta* in *koṣṭha.*

Pathophysiology of Obesity

मेदसाऽऽवृतमार्गत्वाद्वायुः कोष्ठे विशेषतः ।
चरन् संधुक्षयन्यग्निमाहारं शोषयत्यपि ॥
तस्मात् स शीघ्रं जरयत्याहारं चातिकांक्षति ।
विकारांश्चाश्नुते घोरान् कांश्चित्कालव्यतिक्रमात् ॥
एतावुपद्रवकरौ विशेषादग्निमारुतौ ।
एतौ हि दहतः स्थूलं वनदावो वनं यथा ॥
मेदस्यतीव संवृद्धे सहसैवानिलादयः ।
विकारान् दारुणान् कृत्वा नाशयन्त्याशु जिवितम् ॥
मेदोमांसातिवृद्धत्वाच्चलस्फिगुदरस्तनः ।
अयथोपचयोत्साहो नरोऽतिस्थूल उच्यते ॥
इति मेदस्विनो दोषा हेतवो रूपमेव च निर्दिष्टं ।
C.Su 21/5-10

Due to excessive accumulation of *meda* in the body *vāta* gets obstruction to its normal movement as a result *vāta* is specially confined to *koṣṭha* leading to stimulation of digestive power and obsorption of the food. Digestion of consumed food become very fast due to enhanced *agni,* that's why person eats more and more amount of food. In case of delay in taking food he is afflicted with some serious disorders because it digest the *dhātus.* The *agni* and *vāta* are the two most trouble some and complicating and burns the obese individual like the forest fire burning forest. In the event of excessive increase of fat, *vāta* etc. which may lead to development of severe disorders and destroy the life of an individual instantaneously.

Diagnosis of Over Obese

- Excessive increase of *meda, māmsa*
- Buttocks, abdomen and breast become pendulous
- There will be disproportionate in strength in comparison to physical growth

Note : Contemporary understanding of Atisthūla - (weight gain/ overweight - obesity)

World Health Organization (WHO), based on body mass index (BMI). The WHO designations are as follows:

Grade 1 overweight (commonly and simply called overweight) - BMI of 25-29.9 kg/m2

Grade 2 overweight (commonly called obesity) - BMI of 30-39.9 kg/m2

Grade 3 overweight (commonly called severe or morbid obesity) - BMI ≤40 kg/m2

Some authorities advocate a definition of obesity based on percentage of body fat, as follows:

Men: Percentage of body fat greater than 25%, with 21-25% being borderline

Women: Percentage of body fat great than 33%, with 31-33% being borderline

अतिकृश (Atikṛśa)–(Over emaciation)

सेवा रुक्षान्नपानानां लंङ्घनं प्रमिताशनम् ।
क्रियातियोगः शोकश्च वेगनिद्राविनिग्रहः ॥
रूक्षस्योद्वर्तनंस्नानस्याभ्यासः प्रकृतिर्जरा ।
विकारानुशयः क्रोधः कुर्वन्त्यतिकृशं नरम् ॥
C.Su 21/10-12

Causative factors

- Excessive consumption of rough foods and drinks
- Fasting
- Less intake of food
- Excessive exposure to purificatory therapies
- Grief
- Suppression of natural urges including the urge for sleep
- Distrubed sleep
- Application of non unctuous substances in excess
- Excessive indulgence in bath
- By birth due to genes
- Old age
- Suffering from chronic disorder
- Anger

Atikṛśa person does not tolerate

व्यायाममतिसौहित्यं क्षुत्पिपासामयौषधम् ।
कृशो न सहते तद्वदतिशीतोष्णमैथुनम् ।
C.Su 21/13

- Physical exercise
- Over saturation or excess consumption of food
- Hunger, thirst
- Diseases
- Moderate and powerful drugs
- Excessive cold and heat
- Sexual intercourse

The following diseases manifest in atikṛśa individual

प्लीहा कासः क्षयः श्वासो गुल्मोऽर्शांस्युदराणि च ।
कृशं प्रायोऽभिधावन्ति रोगाश्च ग्रहणीगताः ।
C.Su 21/14

- *Plīhā roga*
- *Kāsa*
- *Kṣaya*
- *Śvāsa*
- *Gulma*
- *Arśa*
- *Udara roga*
- *Grahaṇi doṣa*

Prominent features of atikṛśa individual are

शुष्कस्फिगुदरग्रीवो धमनीजालसन्ततः ।
त्वगस्थिशेषोऽतिकृशः स्थूलपर्वा नरो मतः ।
C.Su 21/15

- Wasting prominently marked in buttocks, abdomen and neck
- Prominent vascular net work in the body
- Remnants of skin and bone
- Joints are prominently seen

Note : Contemporary understanding of Atikṛṣa - (weight loss-malnutrition)

- Tropical Sprue
- Pediatric Malabsorption Syndromes
- Malabsorption
- Vitamin deficiency

Malnutrition

- Inadequate food intake is the most common cause of malnutrition worldwide.
- In developing countries, inadequate food intake is secondary to insufficient or inappropriate food supplies or early cessation of breastfeeding.
- In some areas, cultural and religious food customs may play a role.
- Inadequate sanitation further endangers children by increasing the risk of infectious diseases that increase nutritional losses and alters metabolic demands.
- In developed countries chronic illnesses play an important role in the etiology of malnutrition.

Chronic illnesses that commonly are associated with nutritional deficiencies include the following:

- Cystic fibrosis
- Chronic renal failure
- Childhood malignancies
- Congenital heart disease
- Neuromuscular diseases
- Chronic inflammatory bowel diseases

Importance of understanding aṣṭanindita

Eight despicable are considered as undesirable because they do not possesses sufficient resistive power against dise-ases.

- The qualitative and quantitative proportion of the *dhātus* are not uniform.
- The *aṅguli pramāṇa* and *saṁhanana* of the *dhātu* are abnormal
- Vitiation of *rakta, māmsa* and *asthi*
- It may be due to abnormal hormonal activities

सततं व्याधितावेतावतिस्थूलकृशौ नरौ।
सततं चोपचर्यौ हि कर्शनैबृंहणैरपि।
स्थौल्यकार्श्ये वरं कार्श्यं समोपकरणौ हि तौ।
यद्युभौ व्याधिरागच्छेत् स्थूल मेवातिपीडयेत्।

C.Su 21/16-17

The over obese person and over emaciated person suffer from some diseases and these diseases are to be treated by bulk reducing and nourishing therapies respectively. Out of two, emaciation is better for management in comparison to over obese person even though both of them are equally in need of treatment. Over obese person suffers from more diseases in camparison to emaciated individual. The problem with over obese person is that if they managed with nourishing treatment, they become more obese, they cannot withstand bulk reducing therapy because of their strong digestive power. On the other hand emaciated persons responds well to nourishing therapy.

Note : Contemporary understanding of Atīdirgha - (Excessive Tall Person)

- It may be compared to the gigantism of pituitary origin.
- Pathological tall stature includes excessive growth hormone (Gigantism, Acromegaly)
- Genetic disorders like Klinefelter's syndrome, Marfan's syndrome
- Precocious puberty

Note : Contemporary understanding of Atihṛsva (Excessive Short Person)

Pathological short stature includes :

- Growth hormone deficiency (Dwarfism)
- Genetic disorders like Turner's syndrome.

Note : Contemporary understanding of Atiloma - (Excessive Body Hairs)

Congenital terminal hypertrichosis

These findings may be seen in following conditions : Hypertrichosis (werewolf syndrome)

Congenital Hypertrichosis Lanuginosa

- These individuals have been referred to as dog-men, hair-men, human Skye terriers, ape-men, werewolves, and Homo sylvestris.
- Disorders of hypertrichosis are distinguished by the distribution of hair, as well as by the temporal pattern of growth, the possible associated congenital anomalies, and the possible inheritance pattern.
- Congenital hypertrichosis lanuginosa (CHL) has been referred to variably as congenital hypertrichosis universalis, hypertrichosis universalis, hypertrichosis lanuginosa, and hypertrichosis lanuginosa universalis.
- The hypertrichosis seen in Ambras syndrome is believed to result either from an increase in the number of hairs in anagen or from an increased number of follicular units, although no one knows for certain

Hirsutism

- It commonly occurs in women and presents as androgen-induced male-pattern hair growth of the terminal type.
- It may have a congenital or exogenous origin

Note : Contemporary understanding of Aloma - (Absence of Body Hairs)

- Alopecia Areata
- Alopecia Mucinosa
- Androgenetic Alopecia

Note : Contemporary understanding of Atikṛṣṇa - (Excessive black colored person)

- Hyper-pigmentation occurs due to imbalance in the production of melanin by melanocytes.
- Overactive melanocytes and underactive melanocytes result in excessive dark or light skin which makes cosmetic disfiguration leading to psychological upset.
- Hyper-pigmentation seen in Addison's disease, Cushing's disease, Hyperthyroidism
- Hyper pigmentation seen in Chronic Kidney, Liver diseases and even presence of lifethreatening Melanomas

Note : Contemporary understanding of Atigaura - (Excessive white or fair colored person)

- Hypo-pigmentation occur due to imbalance in the production of melanin by melanocytes.
- Vitiligo
- Idiopathic Guttate Hypomelanosis
- Congenital Patterned Leukodermas
- Halo Nevus
- Chediak-Higashi Syndrome
- Albinism

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CHAPTER

18

Janapadodhwamsa Vikār (Pandemic disorders)

Introduction

Janapada- large population, community.

Udhwasa- Destruction of community.

Natural calamities of high magnitude such as floods, famine, cyclone etc. leads to mass destruction. Apart from these calamities, diseases can also lead to such destruction on a mass scale. Such destruction is termed as Janapadodhwamsa.

जनपदानां, जनसमूहानांउध्वंसनमइतिजनपदोदध्वसं ।

(जल्पकल्पतरु)

The diseases which produce destruction of large population called Janapadodhwamsa.

जनपद– जनस्यलोकस्यंपदंआश्रय स्थानंतत्रजनपदं, जनपदानांसंमूहं ।

जनपद– Group of people living in a specific location.

उध्वंस– Means destruction

Epidemiology- (Epi- among. Demos- people, logas-study)

Definition of epidemiology- Epidemiology is the study of the distribution and determinants of health-related states or events (including disease) and the application of this study to the control of diseases and other health problems. Epidemiology is the science that studies the patterns, causes, and effects of health and disease conditions in defined populations.

Janapadodhwamsa- Situation involving the destruction or death of a large population spread over a small locality, or a country or a part of world or even the entire world.

Disease as per Chakrapāni- *Chakrapāni*, the commentator of *Charaka Samhita* says that even though the individuals have difference in physical constitution, food habits, suitability, strength, immunity, age etc. still there are such factors as are common to all individuals and the vitiation of these factors leads to the simultaneous manifestation of diseases having the same set of symptoms leading to the destruction of countries. The factors which are common for all the inhabitants of a country are air, water, land and season.

द्विविधोहेतुर्व्याधिजलकः प्रणिनांभवति–साधारणः असाधारणश्चः तत्रसाधारणंप्रतिपुरुषनियतं वातादिजलकमा-हाराद्यभिधायबहुजलसाधारणंवात जल देश काल रुपम् साधारण वेगकारनमभिधातुं जनपदोध्वंसनी5योभिधीयते ।

(चक्रपाणि टिका च.वि. 3/1-2)

1. असाधारणहेतु
   - Pertaining to the individuals.
   - Causing Doshaja Vyadhi's.
2. साधारणहेतु
   - Each individual take such as diet etc. influencing the states of Doshas.

Introduction

जनपदानां जनसमूहानामुद्ध्वंसनमधिकृत्यकृतं विमानं तं तथा । विमीयतेऽ-नेनेति विमानम् । *C.Vi 3/1 (Gaṅgādhara)*

Janapada means by which mass people get afflicted with diseases and destroy the whole region.

द्विविधो हेतुव्याधिजनकः प्राणिनां भवति साधारणोऽ-साधारणञ्च । तत्र साधारणं प्रतिपुरुषनियतं वातादिजनन माहाराद्यभिधाय बहुजनसाधारण वात जल देश कालरूपमसाधारण रोगकारणमभिधातुं जनपदोद्ध्वंसनीयोऽभिधीयते ।

C.Vi 3/1 (Cakrapāṇi)

Causative factors of the diseases can be classified into two kinds i.e. (i) those factors pertaining to individual *(sādhāraṇa)* and (ii) those common to living beings in general *(asādhāraṇa)*. Person who doesn't follow the rules and regulation of diet along with erratic behaviour leads to aggravation of *vātādi doṣās* and manifest the diseases in that individual.

Other causative factors like vitiated air, water, land and season affect several individuals residing in that locality is called *janapadadhvaṁsa.*

भिन्नाहारवयः सात्म्यप्रकृतीनां समं भवेत् ।
एको विकृत वाय्यादियुगपत्सेवनात् गदः ।
वातादीनां तु विकृतिर्विकृताद्ग्रहचारतः ।
भौमान्तरिक्षदिव्येभ्य उत्पातेभ्यश्च जायते ।
सम्भवः पुनरेतेषां कर्मणः सामुदायिकात् ।
A.S.Su 9/70-72

Diseases that manifest in a locality by the same source i.e. due to vitiation of land, water, air etc. is called *janapada dhvaṁsa.* Inspite of consuming different food, habit, age, constitution person gets affected by one and the same disease due to abnormal water, air etc. These abnormalities are due to abnormal movement of planets, calamities, which occur naturally in the earth, atmosphere and the sky. The cause of epidemics is effect of sinful acts of people who are residing in the epidemic prone area.

जनपदध्वंस हेतु (Causative Factors for Epidemics)

How the diseases manifest to the whole locality even then people residing in that area are of different constitution, age, sex, physical strength, homologation, mental faculties? For this question lord *Ātreya* answered to *Agniveśa.* i.e.

प्रकृत्यादिभिर्भावैर्मनुष्याणां येऽन्ये भावाः सामान्यास्तद्वैगुण्यात् समानकालाः समान लिङ्गाश्च व्याधयोऽभिनिर्वर्तमाना जनपदमुद्ध्वंसयन्ति । ते तु खल्विमे भावाः सामान्या जनपदेषु भवन्तिः तद्यथा वायुः, उदकं, देशः काल इति । *C.Vi 3/6*

Even then there is a development of disease to the whole region inspite of having different constitution etc. It is due to certain factors which are common to all individuals and their vitiation brings abnormality in the whole country with same set of symptomatology leading to destruction of that particular region is called *janapadadvaṁsa.* Common factors which are essential to all inhabitants of a country are water, air, land and seasons.

वातजन्य जनपदध्वंस [Air Epidemic (Janapada-dvaṁsa due to Vāta Duṣṭa)]

तत्र वातमेवं विधमनारोग्यकरं विद्यात्; तद्यथा यथर्तुविषममतिस्तिमितमतिचलमतिपरुषमतिशीतमत्युष्णमतिरुक्ष-मत्यभिष्यन्दिनमतिभैरवारावमतिप्रतिहतपरस्परगतिमति कुण्डलिनमसात्म्यगन्धबास्पसिकतापाशुं धूमोपहतमिति ।

C.Vi 3/6

Air becomes injurious to mass people due to its vitiation are as follows–

- Absence of fresh healthy air in accordance with season
- Excessive moisture in air
- Excessive violent blow of air
- Excessive dryness in air
- Excessive cold air
- Excessive hot air
- Excessive roughness or humidity in air
- Air which brings obstruction in channels
- Agitated air with terrible sound
- Clash between air, which comes from different directions
- Excessive whisling with the capacity to create whirl
- Polluted with unwholesome smell, vapour, gravels, ashes and smoke

जलजन्य जनपदध्वंस (Water Epidemic (Janapada-dvaṁsa due to Duṣṭa Jala)

उदकं तु खल्वत्यर्थविकृतगन्धवर्णरसंस्पर्शं क्लेदबहुल-मुपक्रान्तजलचरविहङ्ग मुपक्षीणजलेशयमप्रीतिकरमपगतगुणं विद्यात्।

C.Vi 3/6

Water becomes contaminated and manifests diseases to the whole community in that locality. The nature of contaminated water are as follows–

- Enormous changes in smell, colour, taste and touch in comparison to normal pure water
- Excessive stickiness in water
- Deserted by aquatic birds
- Reduction of acquatic animals in water.
- Which gives unpleasantness due to its contamination

In *Aṣṭānga Sangraha* along with above, the following also included.

- Water comes from bad or polluted area
- Reservoirs are dried out *A.S.Su 9/74-75*

देशजन्य जनपदध्वसं (Land Epidemic (Janapadadvamsa due to Duṣṭa Deśa)

देशं पुनः प्रकृतिविकृतवर्णगन्धरसस्पर्शक्लेदबहुलमुपसृष्टं सरिसृप व्यालमशक शलभमक्षिकामूष कोलूकश्मशानिक शकुनि जम्बूकादिभिस्तृणोलूपोपवनवन्तं प्रतानादि बहुलमपूर्ववदवपतितशुष्कनष्टशस्यं धूम्रपवनं प्रध्मातपतत्रिगणमुत्कृष्टश्वगण मुद्भ्रान्तव्यथितविविधमृगपक्षिसङ्घ मुत्सृष्टनष्ट धर्म सत्यलज्जाचारशील गुणजनपदं शश्वत्क्षुभितोदीर्णसलिलाशयं प्रततोल्कापातनिर्घात भूमिकम्पमति भया रावरूपं रूक्ष ताम्रारुणसिताभ्रजाल संवृतार्क चन्द्रतारकमभीक्ष्णं ससंभ्रमोद्वेग मिव सत्रासरुदितमिव सतमस्कमिव गुह्यकाचरितमिवाक्रन्दित शब्द बहुलं चाहितं विद्यात् । *C.Vi 3/6*

Characteristic properties of the land indicating its contamination are as follows–

- Abnormal changes in colour, smell, taste and touch of the sand in comparison to normal sand
- Excessive moisturess in land
- Land is full of serpents, wild animals, mosquitoes, locusts, flies, rats, owls, vultures, jackals etc.
- Land is full of grass, creepers and diffusing plants
- Land appears to look differently
- Land is full of fallen, dried, damaged crops
- Land is sorrounded by smoky winds
- Land witnesses wild cries of birds and dogs
- Bewilderment and painful disposition of various animals & birds
- Perversion or dishonesty to different religion, truth, modesty, manners, conduct, behaviour and other such merits
- Continous agitation and overflow of rivers or reservoirs
- Frequent natural occurence of calamities like meteorites, thunder bolts and earthquakes
- Land is full of fierce look and cries in nature
- Sun, moon and stars witness changes frequently like appearance of roughness, coppery, reddish, white and cloudy. Sometimes it looks as if they are covered with a net of clouds
- Land is filled with confusion, excitement, torture, crying and full of darkness
- Land is full of abnormal painful crying sounds as if it is seized by demons (*Guhyaka*)

Aṣṭanga Sangraha included the following points– A.S.Su 9/75

- Land is full of unhealthy foods and herbs
- Land witnessess various frequent natural calamities

कालजन्य जनपदध्वंस (Season Epidemic (Janapadadvaṁsa due to Duṣṭa Kala)

कालं तु खलु यथर्तुलिङ्गाद्विपरीतलिङ्ग मतिलिङ्गं हीनलिङ्गं चाहितं व्यवस्येत् । *C.Vi 3/6*

The following points indicates abnormal seasons are as follows : Appearance of features contrary to normal season like excessive manifestation of symptoms or deficient manifestation of symptoms or abnormal appearance of features in respective seasons.

For example–

Extreme summer in summer or
Lack of summer in summer or
Appearance of rain, cold in summer.

Aṣṭāṅga Saṁgraha mentioned the following points

Effect of Janapadadvaṁsa

Contaminated air, water, land and season are difficult to avoid because they are powerfully bad in their succeeding order and their effects are also unpredictable. *A.S.Su 9/77*

Country may be completely destructed by the polluted air, water, land and season because these manifest various dreadful diseases. These diseases can be managed with difficulty with proper assurance and medicaments.

Vitiation of land, season, air and water in order to understand their importance. By nature these four are indispensible in their progressive order.

- Vitiation of *jala* is more important than *vāta*
- Vitiation of *deśa* is more important than *jala*

- Vitiation of season is more important than *deśa.*

The above statements signifies the gravity of the latter in the development of epidemics. It may be possible to protect against polluted air by not exposing to it but he cannot so easily avoid polluted water. Even polluted water may also be avoided with certain amount of proper care but it is not possible to keep away from the land because the presence of living being resides in land. Upto some extent polluted land also avoided by changing the place but it is not possible to guard against the ill effects of seasons.

Epidemics, Pandemics, and Outbreaks

Covid-19, the pandemic illness caused by the new coronavirus SARS-CoV-2.

Outbreaks

An outbreak is when an illness happens in unexpected high numbers. It may stay in one area or extend more widely. An outbreak can last days or years. Sometimes, experts consider a single case of a contagious disease to be an outbreak. This may be true if it's an unknown disease, if it's new to a community, or if it's been absent from a population for a long time.

Epidemic

An epidemic is when an infectious disease spreads quickly to more people than experts would expect. It usually affects a larger area than an outbreak.

Pandemic

A pandemic is a disease outbreak that spreads across countries or continents. It affects more people and takes more lives than an epidemic. The World Health Organization (WHO) declared Covid-19 to be a pandemic when it became clear that the illness was severe and that it was spreading quickly over a wide area.

The number of lives lost in a pandemic depends on:

- How many people are infected?
- How severe of an illness the virus causes (its virulence)
- How vulnerable certain groups of people are
- Prevention efforts and how effective they are

The WHO's pandemic alert system ranges from Phase 1 (a low risk) to Phase 6 (a full pandemic):

Phase 1: A virus in animals has caused no known infections in humans.

Phase 2: An animal virus has caused infection in humans.

Phase 3: There are scattered cases or small clusters of disease in humans. If the illness is spreading from human to human, it's not broad enough to cause community-level outbreaks.

Phase 4: The disease is spreading from person to person with confirmed outbreaks at the community level.

Phase 5: The disease is spreading between humans in more than one country of one of the WHO regions.

Phase 6: At least one more country, in a different region from Phase 5, has community-level outbreaks.

Prevention:

Slowing the Spread of Pandemic Disease

There's no sure way to prevent the spread of disease during an outbreak, epidemic, or pandemic. It might take scientists a long time to make a vaccine. But it's easier to make specific vaccines more quickly now than it was several years ago. Once a vaccine is ready, people and groups who are more likely to become ill will get it first.

Useful steps to stay healthy:

Wash your hands often with soap and water. If that's not an option, use an alcohol-based hand cleaner or gel sanitizer. Rub it on your hands until they're dry.

Don't touch your mouth, nose, and eyes unless you've just washed your hands.

When you cough or sneeze, cover your mouth and nose with a tissue. Then throw the tissue in the trash. Wash your hands afterward.

Avoid crowded places. Stay home if you can.

Clean and disinfect household surfaces every day.

If you get sick

- Stay home and away from other people.
- Wear a face mask if you have to go out for medical care.
- Avoid public transportation, ride-hailing, and taxis.
- Have only one person care for you, if possible.
- Wash your hands often, and keep household surfaces clean and disinfected.

Pandemic Preparation

- A pandemic causes economic and social problems because so many people are ill or can't work.
- Here are a few things you can do to help your family and your community before and during a pandemic:
- Make an emergency contact list.
- Find local aid organizations in case you need information, support, or health services.
- Find out whether you can work from home.
- Plan home learning activities in case school is closed.
- Store extra water, food, medicine, and supplies.
- Stay as healthy as you can by getting rest, managing stress, eating right, and exercising.

Related Definitions

- Sporadic means cases are rare and happen unevenly.
- Endemic means a disease is constant and happens about as often as expected.
- Hyperendemic means an illness is constant but people are getting sick at a higher rate.
- Cases can also come in a cluster, a group of illnesses in a certain place and time.

Notable Past Pandemics

The list of the deadliest pandemics in world history includes:

The Black Death: Experts think the plague, sparked by bacteria called Yersinia pestis is to blame for the illness that tore through Europe in 1347-51. An estimated 25 million people died.

The influenza pandemic of 1918: Atleast 50 million people around the world died of flu during the outbreak of 1918-19. It's often called the "Spanish flu," not because the virus started there but because Spain was one of the first countries to announce cases.

Smallpox: The smallpox pandemic stretched over hundreds of years. Experts estimate that it killed as many as 300 million people in the 20th century alone. Thanks to widespread vaccine use, it was declared eradicated in 1980.

HIV and AIDS: The human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS), and related illnesses have killed about 32 million people around the world.

Influenza Pandemics

Flu also killed millions of people worldwide in other pandemics:

- 1957 (1.1 million)
- 1968 (1 million)
- 2009 (up to 575,000)

Epidemic and pandemic-prone diseases

- AIDS /HIV/STI
- Anthrax
- Avian influenza
- Chikungunya
- Cholera
- Coronavirus
- Crimean-Congo haemorrhagic fever
- Dengue
- Diphtheria
- Ebola
- Hepatitis
- Influenza
- Measles
- Meningitis
- Middle East respiratory syndrome coronavirus
- Plague
- Poliomyelitis
- Rift valley fever
- Severe acute respiratory syndrome
- Typhoid fever
- Viral haemorrhagic fevers
- Yellow fever
- Zika virus

CHAPTER
19

Nidānārthakara Vyadhi and Vyadhisankara

निदानार्थकर रोग (Nidānārthakara Roga)

निदानार्थकरो रोगो रोगस्याप्युपलभ्यते।
तद्यथा ज्वर संतापाद्ररक्तपित्तमुदीर्यते।
रक्तपित्तज्वरस्ताभ्यां शोषश्चाप्युपजायते।
प्लीहाभिवृद्धय जठरं जठराच्छोथ एव च।
अर्शोभ्यो जठरं दुःखं गुल्मश्चाप्युपजायते।
प्रतिश्यायाद्भवेत् कासः, कासात् संजायते क्षयः।
क्षयो रोगस्य हेतुत्वो शोषस्याप्युपलभ्यते।
C.Ni. 8/16-19

Nidānārthakara rogā's are those where in which one disease serve as a etiology for another disease.

For example :

- Due to *santāpa* of *jvara* → *Rakta pitta* manifest
- *Rakta pitta* and *jvara* → Manifest *Śoṣa*.
- *Plihābhivṛddhi* → Develops *Udara roga*
- *Jaṭhara Roga* → Manifest *Śotha*
- *Arśa Roga* become etiology for → *Jaṭhara roga* and *gulma*
- *Pratiśyāya* develops *Kāsa* → *Kāsa* manifest → *Kṣaya*
- *Kṣaya* develops *śoṣa roga*.

न पूर्वं केवला रोगाः पश्चाद्धेत्वर्थकारिणः।
उभयार्थकरा दृष्टास्तथैवैकार्यकारिणः।
C.Ni. 8/20

Initially *nidānārthakara rogās* manifest independently as a disease and later serve as a etiological factor for another disease, sometimes they serve both purposes i.e. disease as well as etiology and sometimes become either etiology or disease. *Nidānārthakara rogā's* may be divided into two kinds i.e. *ekārthakāri* and *ubhayārthakāri*.

एकार्थकारि (Ekārthakāri)

कश्चिद्धि रोगो रोगस्य हेतुर्भूत्वा प्रशाम्याति।
C.Ni. 8/21

Some diseases subside after manifesting another disease is called *ekārthakāri*.

उभयार्थकारि (Ubhayārthakāri)

न प्रशाम्यति चाप्यन्यो हेत्वर्थं कुरुतेऽपि च।
C.Ni. 8/21

Initial disease will persist after manifesting another disease and act as a etiology for the later disease.

लिङ्ग साङ्कर्य (Liṅga Sāṅkarya)

लिङ्ग चैकमनेकस्य तथैवैकस्य लक्ष्यते।
बहुन्येकस्य च व्याधेर्बहूनां स्युर्बहूनि च।
विषमारम्भमूलानां लिङ्गमेकं ज्वरो मतः।
ज्वरस्यैकस्य चाप्येकः संतापो लिङ्गमुच्यते।
विषमारम्भमूलैश्च ज्वर एको निरुच्यते।
लिङ्गैरेतैज्वरश्वास हिक्काद्याः सन्ति चामयाः।
C.Ni. 8/27-29

Liṅga sāṅkarya means it gives an idea about the disease based on observation of various symptoms. For example :

- One symptom pertain to many diseases
- One symptom pertain to one disease
- Many symptoms observed in one disease
- Many symptoms arise in many disorders

For Example :

- Fever is a common symptom in many diseases having different patterns and complicated origin.
- Various fever pattern observed in various diseases like *jvara, śvāsa, hikkā* etc.

लिङ्गसाङ्कर्य भेद (Classification of Liṅga Sāṅkarya)

कश्चिद्धि रोगो रोगस्य हेतुर्भूत्वां प्रशाम्यति।
न प्रशाम्यति चाप्यन्यो हेत्वर्थं कुरुतेऽपि च॥
एवं कृच्छ्रतमा नृणां दृश्यन्ते व्याधिसङ्कराः।
प्रयोगापरिशुद्धत्वात्तथा चान्योन्य संभवात्॥
C.Ni. 8/21-22

It can be classified into two kinds :

i) *Ekārthakāri*
ii) *Ubhayārthakāri*

एकार्थकारि (Ekārthakāri)

Initial disease subsides after manifesting another disease is called *ekārthakāri.*

उभयार्थकारि (Ubhayārthakāri)

Initial disease remains even after manifesting the another disease is called *ubhayārthakāri.*

व्याधि सङ्कर (Vyādhi Saṅkara)

व्याधिसङ्करा व्याधिमेलकाः ।

C.Ni. 8/21-22 (Cakrapāṇi)

Combination of diseases is called *vyādhi saṅkarā* and it is very difficult for the management.

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CHAPTER

20

Vyadhikshamatva

Prof. Parameswarappa S. Byadgi and Dr. Ramanand Tiwari

व्याधिक्षमत्व का परिभाषा (Vyādhikṣamatva Ka Paribhāṣa)

व्याधिक्षमित्वं व्याधिबलविरोधित्वं व्याध्युत्पाद प्रतिबन्धकत्वमिति यावत् । *C. Su 28/7 (Cakrapāṇi)*

Resistance to diseases or immunity against diseases is of two kinds i.e. the one which attenuate the manifested disease and other variety prevents the manifestation of diseases.

न हि सर्वाण्यपथ्यानि तुल्यदोषाणि । *C. Su 28/07*

During certain conditions, or due to certain factors, even unwholesome food does not produce diseases immediately.

तदेव ह्यपथ्यं देशकालसंयोगवीर्यप्रमाणाति योगाद्भूयस्तरमपथ्यं संपद्यते । *C. Su 28/07*

Unwholesome food substances become more harmful depending upon the nature of the locality, time, combination, potency and excessive quantity. For example, *vrihi* type of corn is unwholesome because it aggravates *pitta.* The same become more unwholesome if consumed by marshy land (*ānupadeśa*) people, the same become less harmful if consumed by *dhanvadeśa* people.

It is more unwholesome during *śarad ṛtu* (autumn season) and less harmful in hemanta *ṛtu* (winter season).

If it is consumed with curd, *phānita* (penidium) become more unwholesome and the same become less harmful if consumed with honey.

If consumed hot it is more unwholesome and the same if taken in cold condition becomes less harmful.

If consumed more in quantity become more unwholesome and become less harmful if consumed less in quantity. *C. Su 28/07 (Cakrapāṇi)*

न च सर्वे दोषाः तुल्य बलाः । *C. Su 28/07*

All unwholesome food articles are not equally harmful, all *doṣās* are not equally powerful.

स एव दोषः संसृष्टयोनिर्विरुद्धोपक्रमो गम्भीरानुगतश्चिरस्थितः प्राणायतन समुत्थो मर्मोपघाति कष्टतमः क्षिप्रकारि तमश्च संपद्यते ।
C. Su 28/07

The *doṣās* are exceedingly painful, acute and difficult to cure during their multiple combinations, if they require mutually contradictory therapies, if they are deep seated i.e. गम्भीरानुगता इति गम्भीर मज्जाधातुगत इत्यर्थः। *C. Su 28/7 (Cakrapāṇi)*–deeper *dhātu* like *majjā* etc. are involved in the pathogenesis of disease.

न च सर्वाणि शरीराणि व्याधिक्षमत्वे समर्थानि भवन्ति ।
C. Su 28/07

All persons are not capable of resisting diseases.

शरीराणि चातिस्थूलान्यतिकृशान्यविनिष्टमांसशोणितास्थीनि दुर्बलान्यसात्म्याहारोपचितान्यल्पाहाराण्यल्पसत्वानि च भवन्त्यव्याधिसहानि, विपरीतानि पुनर्व्याधिसहानि । एभ्यश्चैवापथ्याहार दोष शरीरविशेषेभ्यो व्याधयो मृदवो दारुणः क्षिप्रसमुत्थाश्चिरकारिणश्च भवन्ति । त एव वातपित्तश्लेष्माणः स्थानविशेषे प्रकुपिता व्याधिविशेषानभिनिर्वर्तयन्त्याग्निवेश ।
C. Su 28/07

If disease is chronic i.e. [चिरस्थित इति देहे चिरकालावस्थेन कृतमूलत्वात् कष्टतमोऽसाध्यः । *C. Su 28/7 (Cakrapāṇi)*] it become very difficult to cure because they are deep seated and gives displeasure and disease becomes incurable.

If *daśa prāṇāyatana* are involved in the disease process along with other vital organs like *hṛdaya* etc, then disease become difficult to cure.

If vital organs afflicted, then disease become difficult to cure. If disease manifest instantaneously indicates disease become very difficult to cure.

The following persons are unable to resist diseases :

- Over obese individual
- Over emaciated person

- Whose muscles and blood are diminished markedly
- Debilitated person
- One who consumes unwholesome food
- One who consumes less amount of food
- Whose mental faculties are weak

On the other hand, individuals having opposite type of physical constitution are capable of resisting diseases.

व्याधिसहानीति व्याध्युत्पादकप्रतिबन्धकानि ।

C. Su 28/7(Cakrapāṇi)

Vyādhisaha means one who is capable of resisting diseases. Depending on the nature of unwholesome food, condition of *vātādi doṣās* and person who is not capable of resisting diseases suffers from diseases either mild or severe, acute or chronic.

Vāta, pitta, kapha manifests different diseases depending upon their vitiation at various places.

Contributing Factors for Vyādhikṣamatva

Factors which contributes for *vyādhikṣamatva* are normal *doṣa,* equilibrium state of *dhātu,* normal *agni,* patency of *srotas* etc. or factors which supports the equilibrium state of all physiological parameters. These points are described below.

स्वस्थो धातुसाम्यवान् । *C. Su 1/24 (Gaṅgādhara)*

Equilibrium state of *dhātu* is called *svastha.*

उपयोगि हेतुः प्रयोजनीभूतयोर्धातु साम्यरक्षणकरणयोर्विषये यस्योपयोगित्तो । *C. Su 1/24 (Gaṅgādhara)*

Upayogi hetu (useful etiological factors) are those useful to the body and they indulge in protection of *dhātus,* which is important for homeostatic condition of body and mind.

धातुसाम्यक्रिया चोक्ता तन्त्रस्यास्य प्रयोजनम् ।

C. Su 1/53

Aim and object of *Āyurveda* is the maintenance of equilibrium state of tissue elements.

गात्रमभ्यङ्गसेविनः......... । बलवान्......... । *C. Su 5/89*

Regular oil massage leads to strong body physique.

मात्रावद्ध्यशन.........बलवर्णसुखायुषा । *C. Su 5/8*

Consumption of proper amount of food certainly helps the individual in bringing strength, complexion, happiness and longevity.

नगरी नगरस्येव रथस्येव रथी यथा स्वशरीरस्य मेधावी कृत्येष्ववहितो भवेत् । *C. Su 5/103*

A intelligent person should be vigilant about his duties towards his own body like an office in charge of a city and a charioteer towards the city and the chariot respectively. So, wise person should protect his body both externally and internally by adopting *dinacarya* in his daily routine.

आहाराचार चेष्टासु सुखार्थी प्रेत्य चेह च ।
परं प्रयत्नमातिष्ठेद्बुद्धिमान् हितसेवन् ।

C. Su. 7/60

Person who is desirous of healthy should adopt the healthy practices related to diet, conduct and activities.

साम्यं प्रकृतिरुच्यते । सुखसंज्ञकमारोग्यं .... । *C. Su 9/4*

Equilibrium state of *dhātu* is health and gives rise to pleasure.

त्रय उपस्तम्भा इति–आहारः स्वप्नो, ब्रह्मचर्यमिति एभिस्त्रिभिर्युक्ति युक्तैरुपस्तब्धमुपस्तम्भैः शरीरं बल वर्णोपचयोपचितमनुवर्तते यावदायुः संस्कारात् संस्कारमहितमनुपसेवमानस्य ।

C. Su 11/35

There are three factors, which supports life i.e. *āhāra* (food), *svapna* (sound sleep) and *brahmacarya* (one who is having control over his senses and full of spiritual bliss). By this body will be endowed with strength, complexion, growth and live longer, provided if person doesn't indulge in factors which deteriorate health.

त्रिविधं बलमिति–सहजं, कालजं, युक्तिकृतं च ।

C. Su 11/36

Strength is of 3 types i.e. *sahaja* (constitutional), *kālaja* (temporal) and *yuktikṛta* (acquired).

A. *Sahaja bala*

सहजं यच्छीरसत्वयोः प्राकृतं । *C. Su 11/36*

It is an inherent characteristic property of an individual present since birth. It is because of equilibrium state of *doṣās.*

B. *Kālaja bala*

कालकृतमृतुविभागजं वयःकृत च । *C. Su 11/36*

Kālaja bala is dependent on season and age.

Loss of strength is observed in *ādānakāla*, gaining of strength is observed in *visarga kāla* and middle age is considered as full of strength.

युक्तिकृतं पुनस्तद्यदाहारचेष्टायोगजम् । *C. Su 11/36*

Acquired strength is dependent on healthy practices related to diet, activities etc.

चेष्टाया उचित विश्रामव्यायामादेर्योग आहारचेष्टायोगः ।

C. Su 11/36 (Cakrapāṇi)

Performing exercises with proper methods by giving rest in between different exercises. Other says that

अन्ये तु योग शव्देनरसायन प्रयोगं ग्राह्यन्ति ।

C. Su 11/36 (Cakrapāṇi)

Other considered *yoga* as *rasāyan* therapy.

वाजीकरणयोगेभ्यश्च जातं बलं युक्तिकृतमिति ।

C. Su 11/36 (Gaṅgādhara)

Vājikaraṇa yogās helps to acquire strength by fullfilling necessary deficiencies in deficient *dhātus*.

समयोगयुक्तास्तु प्रकृति हेतवो भवन्ति । *C. Su 11/43*

Proper utilisation of sense organs with their objects, normal actions and normal seasons are beneficial in the maintenance of good health.

..............सर्वशरीरधातुव्यूहकरः । सन्धानकरः शरीरस्य, आयुषोऽनुवृत्तिः । *(C. Su 12/8)*

व्यूहकरः सङ्घातकरो रचनाकर इति यावत् ।

C. Su 12/8 (Cakrapāṇi)

शरीरस्य सन्धानकरः शरीरावयवसंयोजनकृत् ।

C. Su 12/8 (Gaṅgādhara)

Compactness indicates healthy state of the body.

Vāta brings about compactness in all tissue elements of the body and promotes union of the body.

घृतं......रस शुक्रौजसां हितम् । *C. Su 13/14*

Ghee is conducive to *rasadhātu, śukradhātu* and *ojas*.

ओजः सर्वधातुसारो बलाधिष्ठानमिति ।

C. Su 13/14 (Gaṅgādhara)

Ojas is the essence of all *dhātus* and body strength depends on *ojas*.

......न च श्लेष्मवर्धनं बलवर्धनम् । ...... तैलं...... ।

C. Su 13/14

Oil does not aggravate *kapha* but enhances body strength.

बलशुक्रकर...... । मज्जा......बलकृत...... । *C. Su 13/17*

Majjā enhances strength and it also adds to the physical strength espescially to *asthidhātu*.

प्राणाश्रयस्यौजसोऽष्ठौ बिन्दवो हृदयाश्रया इति; एतच्चाष्ठ-बिन्दूकं परमोजो ज्ञेयम् । अर्द्धाञ्जलिपरिमाणन्तु यदोजस्तद प्रधानम् । ......एतच्चौजः सर्वधातु समुदायरूपं । *C. Su 17/73-75*

Superior quality *ojas* situated in *hṛdaya* and its quantity is eight drops. Other type of *ojas* is ordinary one and which is dwelling in vessels attached to the heart and its quantity is half *anjali*.

प्राकृतस्तु बलं श्लेष्मा...... । स चैवौजः स्मृतः ।

C. Su 17/117

Equilibrium state of *kapha* promotes strength, that's why normal *kapha* is called *ojas*.

बलमोजोरुपाय श्लेष्मणः कर्म्म बलमिति बलहेतु ।

C. Su 13/117 (Gaṅgādhara)

Functions of normal *kapha* is like that of *ojas*.

तद्विशुद्धं हि रुधिरं बल......शोणितं...... । *C. Su 24/4*

Normal blood promotes strength.

हिताहारोपयोग एक एव पुरुष वृद्धि करो भवति ।

C. Su 25/31

Wholesome food is the only sole cause for the growth of living being.

i) कुक्कुटो बल्यानां ।
ii) आमलकं वयःस्थापनानां ।
iii) क्षीरघृताभ्यासो रसायनानां ।
iv) सर्वरसाभ्यासो बलकराणाम् ।
v) मरुभूमिरारोग्यदेशानाम् । *C. Su 25/40*

i) Meat of cock is strength promoter.
ii) *Āmalaki* causing rejuvenation.
iii) Habitual use of *ghee* and milk causes rejuvenation.

iv) Regular consumption of food having all tastes promotes strength.
v) Desert land is healthy land.
vi) Sweet taste, sour taste enhances strength. *C. Su 26/42*

बलमारोग्यमायुश्च प्राणश्चाग्नौ प्रतिष्ठिताः ।
अन्नपानेन्धनैश्चाग्निर्ज्वलति व्यति चान्यथा ।
C. Su 27/342

Strength, health, longevity and vital breath are dependent on the condition of *agni*. When the proper quantity of food and drinks supplied to a person which is commensurate with the power of digestion in the form fuel, which sustains the *agni* otherwise leads to abnormal functions.

षड्त्रिंशतं सहस्राणि रात्रीणां हितभोजनः जीवत्यनातुरो जन्तुर्जितात्मा संमतः सताम् । *C. Su 27/348*

One who consumes wholesome food along with self control lives longer with proper health for one thousand and thirty six nights (100 years) and these persons are blessed by noble man.

तत्राहिंसा प्राणिनां प्राणवर्धनानामुत्कृष्टतमं, वीर्यं बलवर्धनानां, विद्या बृंहणानाम्, इन्द्रियजय नन्दनानां, तत्वावबोधो हर्षणानां ब्रह्मचर्यः मयनानामिति; एवमायुर्वेद विदो मन्यन्ते ।
C. Su 30/15

- Non violence is the best among the promoters of longe-vity of living beings.
- *Virya* (semen) is the best among promoters of strength.
- Knowledge is the best among promoters of nourishment.
- Self control is the best for the promotion of delightfullness.
- Knowledge of reality is the best among promoters of happiness.
- Celibacy is the best among those leading to salvation.

प्रयोजनं चास्य स्वस्थस्य स्वास्थ्य रक्षणमातुरस्य विकार प्रशमनं च । *C. Su 30/26*

The main purpose and objectives of *Āyurveda* is the preservation of health in healthy individual and eradication of diseases, which are curable.

सममांसप्रमाणस्तु सम संहननो नरः । दृढेन्द्रियो विकाराणां न बलेनाभिभूयते । क्षुत्पिपासा सहः शीतव्यायामसंसहः । समपक्ता समजरः सममांसचयोमतः । *C. Su 21/18-19*

Person who is having balanced proportion of muscles, compactness, excellent sensory faculties never suffer from diseases. These people can easily withstand hunger, thirst, heat of the sun, cold and physical exercises. *Agni* performs normal digestion and metabolism activities.

सर्वैगुणसमुदितास्तु समधातवः । *C. Vi 8/100*

Sama prakṛti individual possesses equilibrium state of *doṣās, dhātus* and it is considered as best *prakṛti.*

तत्र सर्वैः सारैरुपेताः पुरुषा भवन्त्यति बलाः परमसुखयुक्ताः क्लेशसहाः । *C. Vi 8/111*

Person who is possessing excellence of all *dhātus* including mental faculties i.e. *sarva sāra* are endowed with great strength, happiness and resistance to diseases.

नरो हिताहारविहारसेवी समीक्ष्यकारी विषयेष्वसक्तः । दाता समः सत्यपरः क्षामावानाप्तोपसेवी च भवत्यरोगः। *C. Sā 2/46*

The following persons are free from diseases.

- Consumption of wholesome diet.
- Observation of wholesome behaviour.
- Unattached to sensual pleasures.
- One who donates regularly.
- Impartial in judgement.
- Who is always says truth.
- Endowed with forbearing (forgiveness) nature.
- One who devoted to learned people.

मतिवर्चः कर्म सुखानुबन्धं सत्वं विधेयं विशदा च बुद्धिः ।
ज्ञानं तपस्तत्परता च योगे यस्यास्ति तं नानुपतन्ति रोगाः ।
C. Sā 2/47

The following persons does not fall victim of diseases.

- Person possessing excellent intellect.
- Acts and speech are leading to ultimate bliss.
- Independent thinking or excellent faculties.
- Clarity in understanding.
- Full of knowledge.
- Observation of spiritual activities.
- Continous yogic practices.

देशकालात्मगुणविपरीतानां हि कर्मणामाहार विकाराणां च क्रियोपयोगः सम्यक्, सर्वातियोगसन्धारणम्, असन्धारण मुदीर्णानां च गतिमतां, साहसानां च वर्जनं, स्वस्थवृत्तमेतावद्धातूनां साम्यानुग्रहार्थमुपदिश्यते । *C. Sā 6/8*

For the maintenance of equilibrium state of *dhātus* the following adaptations are essential.

- Proper use of actions and consumption of food contrary to the properties of place, time and the self.
- Avoid over utilization, non utilization and improper utilization of time, intellect and sense objects.
- Non suppression of impelled urges.
- Do not indulge in activities which are beyond ones own capacity.

धातवः पुनः शारीराः समानगुणैः समान गुण भूयिष्ठैर्वाऽप्याहारविकारैरभ्यस्यमानै वृंद्धिं प्राप्नुवन्ति । *C. Sā 6/9*

Dhātus grows constantly by the use of the food substances and drinks having similar qualities or dominated by such qualities.

कात्स्न्र्येन शरीरवृद्धिकरास्त्विमे भावा भवन्ति; तद्यथा कालयोगः, स्वभाव संसिद्धिः, आहारसौष्ठवम्, अविघातश्चेति ।
C. Sā 6/12

Complete uniform growth of the body takes place by following factors.

Kālayoga (Time factor)

काल योग इति वृद्धिकारक यौवनादि कालयोगः ।
C. Sā 6/12 (Cakrapāṇi)

यौवनादौ हि सप्तदश वत्सरादिकाल लक्षणे काल महिम्नैव वृद्धिर्भवति । *C. Sā 6/12 (Cakrapāṇi)*

Young age is the period in which complete development of body *dhātus* observed.

Svabhāvasaṁsiddhi (Natural favourable process)

तेन स्वभावसंसिद्धिशरीरवृद्धिहेतुरदृष्टम् ।
C. Sā 6/12 (Cakrapāṇi)

Certain unseen factors favours the growth of the body naturally is called *svabhāva saṁsiddhi*.

Āhāra Sauṣṭava (Excellence of diet)

आहार सौष्ठवमित्याहार सम्पत् । *C. Sā 6/12 (Cakrapāṇi)*

Food substances possessing excellent properties and qualities which supports and fulfills the growing criteria for *dhātus*.

Avighāta (Absence of factors which deteriorate dhātu)

अविघातश्चेति शरीरवृद्धिविघातकराति व्यवाय मनोघातादिविरहः । *C. Sā 6/12 (Cakrapāṇi)*

Avighāta means absence of factors which favours deterioration of *dhātus*. For example, excessive indulgence in sexual acts and affliction to mental faculties.

बलवृद्धिकरास्त्विमे भावा भवन्ति । तद्यथा बलवत्पुरुषे देशे जन्म, बलवत्पुरुषे काले च, सुखश्च कालयोगः बीजक्षेत्रगुणसंपच्च, आहारसंपच्च, शरीर संपच्च, सात्म्य संपच्च, सत्व संपच्च, स्वभावसंसिद्धिश्च, यौवनं च, कर्म च संहर्षश्चेति ।
C. Sā 6/13

The following factors which favours the promotion of strength :

- Birth of a person in a country where people are naturally strong. For example *'sindha'* region people are strong by nature.
- Time factor which is conducive for *dhātus* and helps for promotion of strength. For example if person born during *hemanta* and *śiśira ṛtu* which favours the promotion of strength.
- Excellency among qualities of *bija* (sperm) and *kṣetra* (ovum and uterus) of parents.
- Excellence of diet.
- Excellence of physique.
- Excellence of suitability.
- All mental faculties are superior.
- Natural mechanism.
- Young age.
- Excercise and such other physical activities.

व्यायामादिकर्माभ्यासान् निजं बलं भवति ।
C. Sā 6/13 (Cakrapāṇi)

Habitual performance of exercise promotes strength.

Always in cheerful mood is also helpful to gain strength.

वर्षशतं खल्वायुषः प्रमाणमस्मिन् काले।
तस्य निमित्तं प्रकृतिगुणात्मसंपत् सात्म्योपसेवनं चेति।
C. Sā 6/29-30

Normal span of life in *kaliyuga* is 100 years.

The following factors helps to live longer upto hundred years.

- Excellent constitute i.e. *sama prakṛti*

तत्र प्रकृतिसम्पत् समवातादि प्रकृतिता समप्रकृतिहि चिरायुर्भवति। *C. Sā 6/30 (Cakrapāṇi)*

Prakṛti sampat means person possessing equilibrium state of all *doṣās* and it is called *sama prakṛti* and these individuals live longer.

Guṇa sampat i.e. excellent compactness of body.

गुणसम्पत् तु सारसंहननादिभिरायुष्य लक्षणैर्योगः किंवा या प्रकृतेर्मातृपि त्राद्युपकरणस्य गुणसम्पत्।
C. Sā 6/30 (Cakrapāṇi)

- Excellent essence, compactness etc.
- Natural excellent inherent qualities transformed from parents.

Ātma Sampat–Righteous acts.

आत्मनस्तु चिरायुष्टकारणधर्म्मयुक्तता सम्पत्।
C. Sā 6/30 (Cakrapāṇi)

Observation of penace, indulging in right conducts helps for longevity.

तथा ब्रह्मचर्यनिवातशयोष्णोदकस्नान निशा स्वप्न व्यायामाश्चैकान्ततः पश्यतमः। *S. Su 20/6*

Celibacy, sleeping in a place which is devoid of breeze, hot water bath, sleeping during night, physical exercises are best adjustable to all as a wholesome substance.

तत्र रसादीनां शुक्रान्तानां धातूनां यत् परं तेजस्तत् खल्वोजस्तदेव बलमित्युच्यते। *S. Su 15/19*

Ojas is the essence of *rasādhi dhātus* and it is also called *bala*.

तत्र बलेन स्थिरोपचितमांसता सर्वचेष्टा स्वप्रतिघातः स्वरवर्ण प्रसादो बाह्यानामाभ्यन्तराणां च करणानामात्मकार्यप्रतिपत्तिर्भवति।
S. Su 15/20

Strength gives stability and maintains compactness of muscles, energy to perform all kinds of activities without any hindrances, clarity in voice and complexion, both *karmendriya* and *jñānendriya* performs their normal functions.

स्वस्थस्य रक्षणं कुर्यादवस्थस्य तु बुद्धिमान्। *S. Su 15/40*

Protection of health of healthy individual is very important.

समदोषः समग्निश्च समधातुमलक्रियः प्रसन्नात्मेन्द्रियमनाः स्वस्थ इत्यभिधीयते। *S. Su 15/41*

Equilibrium state of *doṣa, agni, dhātu, mala* and their activities are normal along with proper co-ordination between soul, sense organs and mind in called *svastha.*

गूढसन्धिसिरास्नायुः संहताङ्गः स्थिरेन्द्रियः।
उत्तरोत्तरसुक्षेत्रो यः स दीर्घायुरुच्यते।
गर्भात् प्रभृत्यरोगो यः शनैः समुपचीयते।
शरीरज्ञान विज्ञानैः स दीर्घायुःसमासतः।
S. Su 35/5-6

Whose joints, vessels and ligaments are properly developed with steady sense faculties and all body organs are excellent from feet to head and are better than its preceeding is said to survive for longer period.

Person who is free from disorders even from foetal life and gradually developing day by day with common and scientific knowledge lives longer.

गगनाम्बु त्रिदोषघ्नं गृहीतं यत् सुभाजने।
बल्यं रसायनं मेध्यं पात्रापेक्षि ततः परम्।
S. Su 45/26

Collected rain water in a clean vessel mitigates all three *doṣās,* promotes strength, rejuvenative and best for intelligence.

साहसं वर्जयेत् कर्म रक्षञ्जीवितमात्मनः जीवन् हि पुरुषस्त्विष्टं कर्मणः फलमश्नुते। *C. Ni 6/5*

Only the living being can enjoy desired fruit of his action. Therefore, one desirous of long life should avoid rash behavior.

सर्वमन्यत् परित्यज्य शरीरमनुपालयेत्।
तदभावे हि भावानां सर्वाभावः शरीरिणाम्।
C. Ni 6/7

Avoiding all the things one has to protect his body first by using appropriate preventive measures.

आहारस्य परं धाम शुक्रं तद्रक्ष्यमात्मनः ।
क्षयो ह्यस्य बहून् रोगान्मरणं वा नियच्छति ।
C. Ni 6/9

Śukra is the ultimate excellent outcome of food. That's why one has to preserve it because its diminution leads to development of many diseases or even death.

हिताशी स्यान्मिताशी स्यात्काल भोजी जितेन्द्रियः ।
पश्यन् रोगान् बहून् कष्टान् बुद्धिमान् विषमाशनात् ।
C. Ni 6/11

Person who is having control over his senses should take wholesome food in proper quantity and in proper time. Otherwise irregular dieting manifest diseases.

ओजोभेद (Ojobheda)

ओजः सर्वधातु सारो बलाधिष्ठानमिति ।
S. Su 13/14 (Cakrapāṇi)

Ojas is the essence of *saptadhātu* and it is the seat for strength.

धातु ग्रहणमिति धातवो गृह्यन्ते यैस्तानीति धातुग्रहणानि धातुवहानि स्त्रोतांसि । *S. Su 15/27 (Dalhaṇa)*

Dhātugrahaṇa refers to *dhātuvaha srotas*. It is also called *ojovaha srotas* as stated by *Cakrapāṇi*.

यत्तदोजः सर्वधातूनां तेजः शरीरसम्भवः स शुक्रस्य मलः ।
A. Hr. Sā 3/63 (Sarvāṅga Sundara)

Ojas is the essence of *saptadhātu* and it is the *mala* of *sukra*.

......ओजश्च सप्तमम् । इति धातुभवा ज्ञेया एते सप्तोपधातवः ।
S. S. Pū 5/17

Ojas is the *upadhātu* of *śukra*.

......ओजो धातूनां क्रमशो मलाः । *A. S. Sā 6/39*

Ojas is the waste product of *śukra dhātu*.

मूल (Root)

किं वा धातुग्रहणस्त्रोतः स्थानतया धातु ग्रहणं हृदयं, ततो निःसृतं धमनीभिरेव । किंवा निष्ठितं इति पाठः, तदा ओजोवाहिस्त्रोतःसु हृदि स्थितमित्यर्थः । *S. Su 15/27 (Cakrapāṇi)*

The seat of *ojovaha srotas* is *hṛdaya* along with blood vessels attached to it.

तेन मूलेन महता महामूला मता दश ।
ओजोवहाः शरीरेऽस्मिन् विधम्यन्ते समन्ततः ।
C. Su 30/8

10 vessels attached to the heart which carry *ojas* & pulsate all over body.

द्विविध ओजस (Dvividha Ojas)

1. मलरूपी ओजस (**Malarūpi Ojas**)
2. साररूपी ओजस (**Sārarūpi Ojas**)

यन्तु सम्भोगादङ्गनागर्भाशयगतमार्तवेनैकैत्र लोलिभूतं जीवाधिष्ठितं शुक्रं, तस्य पाकाद्रसादि वन्मलसारौ स्तः । तत्र मलः ओजः, सारो गर्भः । *A. Hr. Su 11/37-38*

During the process of *pāka* two things are observed i.e. *mala* and *sāra*. *Mala* is the *malarupi ojas* & *sāra* is the *garbha*.

1. पर ओजस (**Para Ojas**)
2. अपर ओजस (**Apara Ojas**)

तथाष्टबिन्दुमितस्यौजसो नाशान्ना पुरुषो विनश्यत्ति, अर्द्धाञ्जलिमित्तस्य (ओजसः) क्षये तु न नश्यतीति व्याचष्टे, तत्र । *C. Su 17/73-74 (Gaṅgādhara)*

- If *aṣṭabindu* quantity *ojas* (*para ojas*) decreases then person will die.
- On the contrary if *ardhāñjali* (*apara ojas*) *ojas* decreases or vitiated manifest 3 kinds of abnormalities i.e. *ojaḥkṣaya, ojo vyāpat* and *ojovisraṁsa*. But person may die due to *ardhāñjali ojokṣaya* also.

ओजोवह स्त्रोतो दुष्टि हेतु (*Ojovaha Srotoduṣṭi Hetu*)

Hetu–etiological factors

अभिघातात्क्षयात्कोपाच्छोकाद्ध्यानच्छ्रमात्क्षुधः ओजः संक्षीयते ह्येभ्यो धातुग्रहणनिःसृतम् । तेजः समीरितं तस्माद्विस्त्रंसयति देहिनः । *S. Su 15/23*

Ojas undergoes decrease due to injury, tissue depletion (*dhātukṣaya*), anger, grief, worry, exertion, hunger etc. resulting into the flowing out from the *dhātus* and getting associated with *tejas* and instigated by *vāta*, which gives various discomfort to the body.

Aṣṭāṅga Sangrahakāra also mentioned same etiological factors. *A. S. Su 19/32-33*

व्यायामोऽनशनं चिन्ता रूक्षाल्पप्रमिताशनम् ।
वातातपौ भयं शोको रूक्षपानं प्रजागरः ॥
कफशोणितशुक्राणां मलानां चातिवर्तनम् ।
कालो भूतोपघातश्च ज्ञातव्याः क्षयहेतवः ॥

C. S. Su 17/76-77

Vyāyāma (excessive physical exercise), *Anaśana* (fasting), *Cintā* (worries), *Rukṣa Alpa Pramita Aśana* (intake of dry food, food in small quantity or habitual intake of -food having one taste only), *Vāta Ātapa* (exposure to the wind and sun), *Bhaya* (fear), *Śoka* (grief), *Rukṣa Pāna* (intake of dry drinks), *Prajāgara* (night vigil), *Ativartana Kapha Śonita Śukra Mala* (excessive elimination of *Kapha*, blood, semen and other excreta), *Kāla* (old age and period of *Ādana Kāla*) and *Bhūtopaghāta* (microbes) are cause for *Ojas Kṣaya*.

चतुर्विध ओजस (Caturvidha Ojas)

एतेनैतदुपपन्नम्, धातूनां तेजसि रसे तथा जीवितशोणिते। श्लेष्मणि प्राकृते वैद्यैरोजःशब्दः प्रकीर्तितः॥ इति।

A.H.Su. 11/37-39 (Āyurvda Rasāyana Commentary)

1. धातूनां तेजसि (*Dhātunām Tejasi*)
2. रसे (*Rase*)
3. जीवितशोणित (*Jīvaśoṇite*)
4. श्लेष्मणि प्राकृते (*Śleṣmaṇi Prākṛte*)

Classification of *Ojas*

Ojas is classified into two categories viz.

तच्चापिपरापरभेदेनद्विविधं; तत्रयत्परमष्टबिन्दुकंतद्धदितिष्ठति, यत्तुततोबहुतदपरंशरीरंप्रीणयति । *(Cakra. S.S.Su. 15/9)*

तद्वदोजोऽपिपरंहृदयस्थमष्टबिन्दुप्रमाणमाधारः प्रासृतिकस्यरसात्मकस्यौजसः क्षयवृद्धिभाजः। *(A.S.Śa 8/9)*

अर्धांजलिः शुक्रस्य। तावदेवमस्तिश्कमोजश्च।

(A.S.Śa 5/92)

Cakrapāṇi in *Bhānumati* commentary mentioned that *Ojas* is of two kinds

1. *Para Ojas*
2. *Apara / Ślaiṣmikā Ojas*

- *Para* is of eight drops in quantity and it dwells in heart and its diminution leads to death.
- *Apara Ojas* is 1/2 *Añjali* and it circulate in whole body and its diminution leads to immunodeficiency.
- *Ojas* stays in human body since the time of fertilization of ovum by sperm to whole life to execute vital functions.

अर्धान्जलिः शुक्रस्यतावदेवप्रमाणं, तावदेवश्लैष्मिकस्यौजसइति।

(C.S.Śa. 7/15)

The quantity of *Ślaiṣmikā Ojas* is 1/2 *Añjali.*

श्लैष्मिकस्यौजसइत्यनेनयदोजोऽष्टबिन्दुकंतद्व्यतिरिक्तस्यौजसओजोवहधमनीवाह्यस्यविशुद्धश्लेष्मसमानगुणस्यार्धाञ्जलिप्रमाणतांदर्शयति । ओजोहिपरावरभेदेनद्विविधमर्थेदशमहामूलीयेदर्शितमेव। *(Cakra. C.S.Śa. 7/15)*

- *Cakrapāṇi* mentioned that *Ojas* is of two types
- *Para Ojas* is excellent variety and it is eight drops in quantity
- *Ślaiṣmikā Ojas/Avara (Apara)* is 1/2 *Añjali* and it circulates through *Ojovaha Dhamanīs* and its attributes are similar to those of pure *Śleṣma.*

तत्परस्यौजसः स्थानंतत्रचैतन्यसङ्ग्रहः।
हृदयंमहदर्थश्चतस्मादुक्तंचिकित्सकैः ॥

(C.S.Su. 30/7)

Heart is the substratum of the *Para Ojas* and it is the controller of the mind. That is why the physicians considered heart as *Hṛdaya, Mahat* and *Artha*.

Importance of ojas

येनौजसावर्तयन्तिप्रीणिताः सर्वदेहिनः ।
यद्दृते सर्वभूतानांजीवितंनावतिष्ठते ॥
यत्सारमादौगर्भस्ययत्तद्गर्भरसाद्रसः ।
संवर्तमानंहृदयंसमाविशतियत्पुरा ॥
यस्यनाशात्तुनाशोऽस्तिधारियद्धृदयाश्रितम् ।
यच्छरीररसस्नेहः प्राणायत्रप्रतिष्ठिताः ॥
तत्फलाबहुधावा ताः फलन्तीव(ति) महाफलाः ।

(C.S.Su. 30/9-11)

- It nourishes all the living beings and there can be no life without *Ojas*.
- It *Ojas* marks the beginning of the formation of *Garbha* (embryo).
- It is the *Sārira Rasa* (nourishing) fluid from the *Garbha* (embryo).

- It enters the heart at the stage of the *Garbha* (embryo's) formation.
- Its loss causes either death or makes a favourable environment for the disease development.
- It sustains the life and is located in the heart. It constitutes the essence of all the *Dhātus* (tissues).

Entrance of *Ojas* into the heart of the embryo manifest the cardiac activities. Thus, in the three different stages of the foetus, *Ojas* plays an important role.

1. At the time of conception, it is the essence of the sperm and the ovum.
2. In the 2nd stage, it is the essence of the slime material which provides nutrition to the embryo.
3. In the 3rd stage, when there is formation of various organs, *Ojas* manifests its own actions.

Because it pervades all the stages of life, the synonym mahat attributed to it is justified. Death occurs due to loss of *Ojas* even if there is no loss of other tissue elements of the body.

Rasa as Ojas

रसश्चौजसंख्यातः। (C.S.Ni 4/7)

- *Cakrapāṇi* said that *Rasa Dhātu* is also known as *Ojas*.
- In *Rājayakṣmā* chapter *Cakrapāṇi* mentioned that *Rasa* which resides in the heart is of *Poṣya* (which is nourished, as distinct from *Poṣaka* which provides nourishment) type. Some others interpret this as *Ojas*.
- While describingthe etiology of *Rājayakṣmā* caused by *Kṣaya*, *Caraka* stated the reasons of dimension of *Śukra* and *Ojas* in it, on that *Cakrapāṇi* said that *Ojas* is *Rasa* and vice versa.
- In *Rājayakṣmā*, whatever food is digested in *Koṣṭha* by *Agni's* is mostly reduced to *Malas* and very little of it contributes to the formation of *Ojas*, but at some other place *Ojas* is *Sāra* of *Deha*.
- *Cakrapāṇi* said that *Ojas* implies for the *Sārabhāga* or *Rasa* in the body.

Properties of Ojas

तेजोयत्सर्वधातूनामोजस्तत्परमुच्यते ।
मृदुसोमात्मकंशुद्धंरक्तमीषत्सपीतकम् ॥
यत्सारमादौगर्भस्ययच्चगर्भरसाद्रसः ।
संवर्तमानंहृदयंसमाश्रयतियत्पुरा ॥
यच्छरीररसः स्नेहः प्राणोयत्रप्रतिष्ठितः।
यस्यानाशान्ननाशोऽस्तिप्रीणितायेनदेहिनः ॥
(*A.S.Su. 19/29-31*)

ओजस्तुतेजोधातूनांशुक्रान्तानांपरंस्मृतम ।
हृदयस्थमपिव्यापिदेहस्थितिनिबन्धनम ॥
स्निग्धंसोमात्मकंशुद्धमीषल्लोहितपीतकम ।
यन्नाशेनियतंनाशोयस्मिंस्तिष्ठतितिष्ठति ॥
(*A.S.Su. 19/37-38*)

सर्वधातूनांस्नेहमोजः, क्षीरेघृतमिवतदेवबलमिति।
(*B.P.Pu. 3/181*)

- The essence of all the *Dhātus* is known as *Para Ojas*.
- *Vṛddha Vāgbhaṭa* also said that it is soft, possess the qualities of water (*Somātmaka*), pure, slightly reddish with yellowish tinge (शुद्धंरक्तमीषत्सपीतकम) in colour, it is the first essential element of the embryo, the essence of the *Rasa Dhātu* of the foetus and gets localised in its heart very early i.e. earlier to the formation of the different parts of the body.
- It is the unctuous, *Somātmaka*, clear, slight reddish yellow in colour.
- It is the chief fluid material on which the life depends, by the absence or loss of which there is loss of life and by it the living beings are kept happy.

तत्ररसादीनांशुक्रान्तानांधातूनांयत्परंतेजस्तत्खल्वोजस्तदेवबलमित्युच्यते, स्वशास्त्रसिद्धान्तात्। (*S.S.Su. 15/19*)

Ojas is defined as the final essence of *Dhātus* beginning with *Rasa* and ending with *Śukra* and it is responsible for strength.

तन्त्रान्तरे तु ओजःशब्देन रसोऽप्युच्यते, जीवशोणितमप्योजः शब्देनामनन्ति केचित्, ऊष्माणमप्योजःशब्देनापरे वदन्ति॥
S.S.Su. 15/19 (Ḍalhaṇa)

Ḍalhaṇā stated that in other treatises,

- *Rasa* as *Ojas*

- *Jīvaśoṇita* as *Ojas*
- *Ūṣmāṇa* as *Ojas*

Ojas as *Mala*

कफः पित्तंमलाः खेषुप्रस्वेदोनखरोमच।
स्नेहोऽक्षित्वग्विशामोजोधातूनां क्रमशोमलाः॥

(A.H.Śa 3/63)

ओजः सर्वधातूनांतेजः शरीरसम्भवं, स शुक्रस्यमलः।

(Aruṇadutta A.H.Śa 3/63)

Ojas is essence of all *Dhātus* and it is considered as mala of *Śukra*.

Vāgbhaṭa mentioned *Ojas* as *Sāra & Mala*

शुक्रस्यसारमोजः। अत्यन्तशुद्धतयाऽस्यमलाभावः।

(A.H.Śa 6/46)

कफः पित्तंमलः खेषुप्रस्वेदोनखरोमच।
स्नेहोऽक्षित्वग्विशामोजोधातूनां क्रमशोमलाः॥

(A.H.Śa 6/55)

- *Ojas* as *Śukrasāra*
- *Ojas* as *Śukramala*

दोष पाक (Doṣa pāka)

दोष प्रकृति वैकृत्यं लघुता ज्वर देहयोः।
इन्द्रियाणां च वैर्मल्यं दोषाणां पाकलक्षणम्॥

M. Ni. 2/66-73 (Madhukoṣa)

This condition is stated to be *nirāma* stage of *doṣa* as a result diseases either cures completely or symptoms starts diminishing gradually or agitated *doṣās* start coming towards *koṣṭha*. It is the essential stage for the recovery of the disease.

During *doṣapāka* certains symptoms will manifest these are as follows.

1. The symptoms of the *doṣās* involving in the development of disease starts diminishing.
2. Patient feel lightness or sense of relaxation.
3. Fever will subside.
4. Sense organs receive their normal sensation and perform normal activities.

b. Changes takes place in *doṣās* as per various stages of *kriyākāla* and the same was described in detail in *kriyākāla* chapter.

c. *Vegāvasthā* and *avegāvasthā*–The stage of attack and stage between the attacks of the disease. When the *doṣās* attain *sammūrchanā* with *dhātus, malās* as a result disease manifest and when *sammūrchanā* breaks person will be free from disease.

The stage in between the attacks i.e. *avegāvasthā* is a condition in which *doṣās* remain increased and dormant in this stage and can produce disease when conditions become favourable to it. Such stages are observed in *Tamaka Śvāsa, Apasmāra, Viṣamajvara* etc. The importance of the knowledge of these stages lies in the fact that during the attack the treatment may be directed towards correction of *doṣās,* while *avegāvastha* stage can be corrected by proper avoidance of etiological factors or by enhancing *vyādhikṣamatva.*

Immunity

In biology, immunity is the state of having sufficient biological defences to avoid infection, disease, or other unwanted biological invasion. It is the capability of the body to resist harmful microbes from entering it. Immunity involves both specific and non-specific components. The non-specific components act either as barriers or as eliminators of wide range of pathogens irrespective of antigenic specificity. Other components of the immune system adapt themselves to each new disease encountered and are able to generate pathogen-specific immunity.

Immunity and immune pathology are proverbial two edges of 'double edged sword'.The structure and function of the normal immune system (immune physiology) is well organised to protect the body against causative agents.Antigen may induce specifically sensitised cells having the capacity to recognise, react and neutralise the injurious agent or organisms. The antigen may combine with antibody to form antigen-antibody complex. A state of balance in the immune responses (humoral or cell-mediated) is essential for protection against endogenous and exogenous antigens.

Immunophysiology

It is important to know the structure and function of the normal immune system and to go through the few terms commonly used immunology.

- **Antigen (Ag) :** It is defined as a substance; usually protein in nature, which when introduced into the tissues stimulates antibody production.
- **Hapten :** It is a non-protein substance which has no antigenic properties, but on combining with a protein can form a new antigen capable of forming antibodies
- **Antibody (Ab) :** It is a protein substance produced as a result of antigenic stimulation. Circulating antibodies are immunoglobulins (Igs) of which there are 5 classes: IgG, IgA, 1gM, IgE and IgD.
- An antigen may induce specifically sensitized cells having the capacity to recognize, react and neutralise the injurious agent or organisms.
- The antigen may combine with antibody to form antigen antibody complex. This complex is known as primary reaction followed secondary reaction starts that may lead to tissue damage.

Types of Immunity

Immunity or body defence mechanism is divided into 2 types:

1. Nonspecific or innate immunity with humeral and cellular components
2. Specific or adaptive immunity with humeral and cellular components

1. **Nonspecific or innate immunity:** It is considered as the first line of defense without antigenic specificity and its major components are:

- Humoral: comprised by complement.
- Cellular: consists of neutrophils, macrophages, and natural killer (NK) cells.

It is modulated by following mechanisms-

- Phagocytosis by WBCs and tissue macrophages.
- Enzymes of GIT and acid of stomach.
- Keratised stratum corneum protects skin.
- Lysozyme and same polypeptides in tears and sweat

2. **Specific or adaptive immunity: Specific or adaptive immunity**It is characterised by antigenic specificity and its main components are:

- Humeral: consisting of antibodies formed by B cells.
- Cellular: mediated by T cells.

It is the most powerful immune mechanism that protects the body from invading substances.

Acquired immunity developed by entrance of vaccine is called Active immunity; while if it is developed in a non-immune individual by transfer of blood, serum, lymphocytes or antibodies from an immune individual is called Passive immunity.

Active immunity

It occurs when one makes his/her own antibodies. This type of immunity is long term.

1. **Getting the disease:** If person get an infectious disease (like Chicken pox), often times, that stimulates the production of memory cells which are then stored to prevent the infection in the future.
2. **Vaccination:** A vaccination is an injection of a weakened form of the actual antigen that causes the disease. The injection is too weak to make people sick, but his B lymphocytes will recognize the antigen and react as if it were the real thing. Thus it produces memory cells for long term immunity.

Passive Immunity

It occurs when the antibodies come from some other sources. This type of immunity is short term.

1. Breast milk: Milk from a mother's breast contains antibodies. The baby is acquiring passive immunity. These antibodies are last during several weeks.
2. Gamma globulin: A Gamma globulin shot is purely an injection of antibodies to provide temporary immunity person might receive a Gamma globulin shot during the travel outside of the country.

3. Transfer of activated T-cells: Passive or "adoptive transfer" of cell-mediated immunity, is conferred by the transfer of "sensitized" or activated T-cells from one individual into another. It is rarely used in humans because it requires histocompatible (matched) donors, which are often difficult to find.

Healing/Repair

Healing

- It is the body response to injury in an attempt to restore normal structure and function.
- The process of healing involves 2 distinct processes :

  1. Regeneration 2. Repair
- Regeneration when healing takes place by proliferation of parenchyrnal cells and usually results in complete restoration of the original tissues.
- Repair when the healing takes place by proliferation of connective tissue elements resulting in fibrosis and scarring.

High yield information

Both the processes take place simultaneously in certain conditions.

Regeneration

- Some parenchymal cells are short-lived
- Some parenchymal cells have a longer lifespan
- The cells are under the constant regulatory control of their cell cycle and these include growth factors such as: epidermal growth factor, fibroblast growth factor, platelet-derived growth factor, endothelial growth factor, transforming growth factor-b.

Depending upon their capacity to divide, the cells of the body can be divided into 3 groups: labile cells, stable cells, and permanent cells.

Repair

- It is the replacement of injured tissue by fibrous tissue.
- Two processes are involved in repair:
- Granulation tissue formation
- Contraction of wounds.

Repair response takes place by participation of mesenchymal cells (consisting of connective tissue stem cells, fibrocytes and histiocytes), endothelial cells, macrophages, platelets, and the parenchymal cells of the injured organ.

CHAPTER

21

Rogi Bala Pareeksha
(Assessment of Strength of Patient)

Rogi Bala Parīkṣā is done by observing the following parameters according to Caraka

1. *Prakṛti*– Identification of constitutions
2. *Sāra*– Examination of essence of *dhātus*
3. *Saṁhanana*– Examination of compactness of body organs.
4. *Pramāṇa*– Examination of measurement of body organs.
5. *Sātmya*– Examination of homologation
6. *Satva*– Examination of mental faculties
7. *Āhāra Śakti*– Examination for power of exercise
8. *Vyāyāma Śakti*– Examination for power of exercise
9. *Vaya*– Examination of age.

Rogi Bala Parīkṣā is done by observing the following parameters according to Suśruta

1. *Āyu*
2. *Ṛtu*
3. *Agni*
4. *Vaya*
5. *Deha*
6. *Bala*
7. *Satva*
8. *Sātmya*
9. *Prakṛti*
10. *Bheṣaja*
11. *Deśa*

कारणादि दशविध परीक्ष्य भाव (Karaṇādi Daśavidha Parikṣya Bhāva)

इमानि खलु तावदिह कानिचित् प्रकरणानि भिषजां ज्ञानार्थमुपदेक्ष्यामः । ज्ञानपूर्वकं हि कर्मणां समारम्भं प्रशसंन्ति कुशलाः । ज्ञात्वा हि कारण करण कार्ययोनि कार्य कार्यफलानुबन्ध देश काल प्रवृत्युपायान् सम्यगभिनिर्वर्तमानः कार्याभिनिवृत्ताविष्टफलानुबन्धं देश कालप्रवृत्युपायान् सम्यगभिनिर्वर्तमानः कार्याभिनिवृत्ताविष्टफलानुबन्धं कार्यमभिनिर्वर्तयत्यनति महता यत्नेन कर्ता । *C.Vi 8/68*

Certain important topics explained by *Caraka* for the sake of knowledge of physicians i.e. action must be initiated with due knowledge. Desired actions can be fulfilled without much effort provided if action was initiated after acquiring full knowledge of *kāraṇa* (cause), *karaṇa* (instrument), *kāryayoni* (source of action), *kārya* (action itself), *kāryaphala* (fruits of action), *anubandha* (subsequent manifestation), *deśa* (habitat), *kāla* (season), *pravṛtti* (initiation) and *upāya* (means of action).

एतद्दशविदमग्रे परीक्ष्यं, ततोऽनन्तरं कार्यार्थां प्रवृत्तिरिष्टा । तस्माद्भिषक् कार्यं चिकिर्षुः प्राक् कार्य समारम्भात् परीक्षया केवलं परीक्ष्यं परीक्ष्य कर्म समारभेत् कर्तुम् । *C.Vi 8/79*

Examination of *kāraṇādi* ten factors is essential to initiate actions. So, physician should examine all the essential factors which are necessary for the diagnosis of diseases after that initiate actions to get desired result.

तत्रेमे भिषग्गुणा यैरुपपन्नो भिषग्धातु साम्याभिनिर्वर्तने समर्थो भवति; तद्यथा पर्यवदातश्रुतता, परिदृष्टकर्मता, दाक्ष्यं, शौचं, जितहस्तता, उपकरणावत्ता, सर्वेन्द्रियोपपन्नता, प्रकृतिज्ञता, प्रतिपात्तिज्ञता चेति । *C.Vi 8/86*

Physician desirous of brining homeostasis among *dhātu* should adopt certain qualities to become ideal physician are as follows– knowledge of medical science in toto, practical experience, skill, purity, ideal prescriptions, possessing all the equipments, normalcy of all sense organs, knowledge of the various natural manifestation and knowledge of course of action of prescribed therapy.

आतुरस्तु खलु कार्यदेशः । तस्य परीक्षा आयुषः प्रमाणज्ञानहेतोर्वास्याद्, बलदोष प्रमाणज्ञानहेतोर्वा । तत्र तावदियं बलदोष प्रमाण ज्ञानहेतोः; दोषप्रमाणानुरुपो हि भेषज प्रमाणविकल्पो बल प्रमाण विशेषापेक्षो भवति । *C.Vi 8/94*

A patient constitutes *kāryadeśa*. That's why patient should be examined thoroughly to obtain the knowledge of life span, strength and intensity of morbidity. Main intention is to know the strength and the intensity of morbidity because treatment may be initiated after knowing the intensity of the morbidity and strength of patient. For example if stronger medicaments employed to a weaker patient it manifest many adverse reactions resulting into death. On the contrary if mild medicaments employed to a strong person having serious morbidity it may not cure the disease. Ladies, old age persons and children are delicate that's why always mild medicaments must be prescribed.

रोगमादौ परीक्षेत ततोऽनन्तर मौषधम्।
ततः कर्म भिषक् पश्चाज्ज्ञानपूर्व समाचरेत्।
यस्तु रोगमविज्ञाय कर्माण्यारभते भिषक्।
अप्यौषधविधानज्ञस्तस्य सिद्धिर्यदृच्छया।
यस्तु रोगविशेषज्ञः सर्व भैषज्य कोविदः।
देशकाल प्रमाणज्ञस्तस्य सिद्धिरसंशयम्।
C.Su 20/20-22

Thorough examination of the patient is the initial step in clinical medicine followed by planning suitable appropriate therapeutics. If physician initiates the therapies without accurate diagnosis of the disease, accomplish the desired object only by chance and will not get name and fame. On the contrary, if physician prescribes therapies after proper diagnosis and plans the principle line of treatment after considering morbidity of pathogenetic factors, strength, place, season etc. definitely he will get success.

मैत्री कारुण्यमार्तेषु शक्ये प्रीतिरुपेक्षणम्।
प्रकृतिस्थेषु भूतेषु वैद्यवृत्तिश्चतुर्विधेति ॥
C.Vi 9/26

Physician should be symphathetic and affectionate to all the patients who are curable and should feel detached with those who are about to die.

ज्ञानवुद्धि प्रदीपेन यो नाविशति तत्ववित्।
आतुरस्यान्तरात्मानं न स रोगांश्चिकित्सति।
C.Vi 4/12

Inspite of acquiring all the essential knowledge for the diagnosis of disease and its management, if he didn't try to enter into the heart of the patient by virtue through the light of his knowledge, he may not be able to treat the disease successfully.

देश (Deśa)

देशस्तु भूमिरातुरश्च ॥

तत्र भूमिपरीक्षा आतुरपरिज्ञानहेतोर्वा स्यादौषधपरिज्ञानहेतोर्वा। तत्र तावदियमातुरपरिज्ञानहेतोः। तद्यथा–अयं कस्मिन् भूमिदेशे जातः संवृद्धो व्याधितो वा; तस्मिंश्च भूमिदेशे मनुष्याणामिदमाहारजातम्, इदमाचारजातम्, एतावच्च बलम्, एवंविधं सत्त्वम्, एवंविधं सात्म्यम्, एवंविधो दोषः, भक्तिरियम्, इमे व्याधयः, हितमिदम्, अहितमिदमिति प्रायोग्रहणेन। औषधपरिज्ञानहेतोस्तु कल्पेषु भूमिपरीक्षा वक्ष्यते। (C.S.Vi.8/92-93)

Deśa (place) is categorizing into two types:

1. *Bhūmi* (land)
2. *Ātura* (body of the patient).

Bhūmi Parīkṣā is done to know the :

A. आतुरपरिज्ञानहेतोर्वा (*Ātura Parijñāna hetu*)- Complete knowledge regarding the *Ātura Parīkṣā* is called *Ātura Parīkṣā* is known as *Aūṣadha Parijñāna.*

B. स्यादौषधपरिज्ञानहेतोर्वा (*Aūṣadhi Parijñāna hetu*)- Complete knowledge regarding the medicine (Aushadha) is known as Aushadha Parijnana.

आतुरपरिज्ञानहेतोर्वा (*Ātura Parijñāna hetu*)- Examination of the *Deśa* is important to know the patient and also the drugs to be used. However the patient is examined at the being to know details of the patient in which type of land the patient was born, had growth, development and initiated as well suffered from the disease. Atura *Deśa* examination is necessary to know what type of diet, usually mode of life style, conduct, strength, strength of mind, suitability, predominance of *Doṣaja Prakṛtī* (physical constitution), likings, predominance of disease, wholesomeness and unwholesomeness.

स्यादौषधपरिज्ञानहेतोर्वा (*Aūṣadhi Parijñāna hetu*)- The details regarding the examination of the land to gain more knowledge of drug is described in *Kalpa Sthāna* (*Madana Kalpa Adhyāya*).

दशविध परीक्षा (Daśavidha Parīkṣā)

दशविध परीक्षा [Daśavidha Parikṣā (Ten fold examination)]

तस्मादातुरं परीक्षेत प्रकृतितश्च, विकृतितश्च, सारतश्च, संहननतश्च, प्रमाणतश्च, सात्म्यतश्च, सत्वतश्च, आहारशक्तितश्च, व्यायामशक्तितश्च, वयस्तश्चेति.... । *C.Vi 8/94*

1. *Prakṛti*– Identification of constitutions
2. *Vikṛti*– Morbidity of pathologic factors
3. *Sāra*– Examination of essence of *dhātus*
4. *Saṁhanana*– Examination of compactness of body organs.
5. *Pramāṇa*– Examination of measurement of body organs.
6. *Sātmya*– Examination of homologation
7. *Satva*– Examination of mental faculties
8. *Āhāra Śakti*– Examination for power of exercise
9. *Vyāyāma Śakti*– Examination for power of exercise
10. *Vaya*– Examination of age.

सुश्रुतोक्त द्वादश परीक्षा [Suśrutokta Dvādaśa Parīkṣā (Twelve fold examination)]

1. *Āyu*
2. *Vyādhi*
3. *Ṛtu*
4. *Agni*
5. *Vaya*
6. *Deha*
7. *Bala*
8. *Satva*
9. *Sātmya*
10. *Prakṛti*
11. *Bheṣaja*
12. *Deśa*

आतुरस्तु खलु कार्यदेशः। तस्य परीक्षा आयुषः प्रमाणज्ञानहेतोर्वा स्याद्, बलदोषप्रमाणज्ञानहेतोर्वा। तत्र तावदियं बलदोषप्रमाणज्ञानहेतोः; दोषप्रमाणानुरूपो हि भेषजप्रमाणविकल्पो बलप्रमाणविशेषापेक्षो भवति। सहसा ह्यतिबलमौषधमपरीक्षकप्रयुक्तमल्पबलमातुरमतिपातयेत्; न ह्यतिबलान्याग्नेयवायवीयान्यौषधान्यग्निक्षारशस्त्रकर्माणि वा शक्यन्तेऽल्पबलैः सोढुम्; असह्यातितीक्ष्णवेगत्वाद्धि तानि सद्यःप्राणहराणि स्युः। एतच्चैव कारणमपेक्षमाणा हीनबलमातुरमविषादकैर्मृदुसुकुमारप्रायैरुत्तरोत्तरगुरुभिरविभ्रमैरनात्ययिकैश्चोपचरन्त्यौषधैः; विशेषतश्च नारीः, ता ह्यनवस्थितमृदुविवृतविक्लवहृदयाः प्रायः सुकुमार्योऽबलाः परसंस्तभ्याश्च। तथा बलवति बलवद्व्याधिपरिगते स्वल्पबलमौषधमपरीक्षकप्रयुक्तमसाधकमेव भवति। तस्मादातुरं परीक्षेत प्रकृतितश्च, विकृतितश्च, सारतश्च, संहननतश्च, प्रमाणतश्च, सात्म्यतश्च, सत्त्वतश्च, आहारशक्तितश्च, व्यायामशक्तितश्च, वयस्तश्चेति, बलप्रमाणविशेषग्रहणहेतोः ॥ *C.Vi. 8/94*

It is very much essential to prescribe the therapy to the patient, which constitutes *kārya deśa* or the site for the administration of therapies with a view to bring back the normalcy among *doṣa, dhātu* etc. The purpose of examination is to obtain knowledge regarding the span of life, strength and the intensity of morbidity, because if a physician having not examined properly administers intensely potent drug suddenly, it may kill the patient. Weak patients are incapable of resisting strong therapies like medicaments dominating in *agni* and *vāyu mahābhūtas,* application of alkalies and heat (cauterization) and surgical operations. They may cause instantaneous death due to unbearable and over intense impulse of the drug. Keeping this in mind, the physicians should treat the weak patients with drugs which are unharmful, mild, delicate, heavy in progressive order. Mild medicaments should be prescribed to ladies because they have unstable, soft, bare and timid heart and they are delicate, weak and subordinate to others. In brief, prescribed therapy should not be injurious to the body and mind. Stronger therapies that are neither distressing during their digestion nor associated with serious complications may be administered slowly and gradually. Similarly, if weak therapies are administered to a strong individual having a serious disease without proper examination, the disease does not get cured. Hence, the patient should be examined in respect of *prakṛti* (constitution), *vikṛti* (morbidity), *sāra* (excellence of *dhātus*), *saṁhanana* (compactness of organs), *pramāṇa* (measurements of the organs of the body), *sātmya* (suitability), *satva* (psychic conditions), *āhāra śakti* (power of intake and digestion of food), *vyāyāma śakti* (power of performing exercise) and *vayas* (ageing) in order to ascertain his strength and the intensity of the morbidity.

Thus the strength of individuals can be classified depending upon the surperiortity, mediocrity and inferiority of the above mentioned factors, viz. *prakṛti, sāra* etc., except *vikṛti.*

Three types of the strength of the *doṣās* are inferred from the three types of the intensity of morbidity. Thereafter, (depending upon the nature of the *doṣās* involved, three types of medicaments, viz. strong, mild and moderate should be administered. With a view to ascertaining the life span of an individual, symptoms described in

Indriyasthāna and also in the 8th chapter of *Śārirasthāna* must be taken into account.

Ten fold examinations should be done to understand the overview condition of the person in order to carry out scientifically and methodically therapeutic treatment in a systematic planned manner to get desirable and satisfying successful results. *Vikṛti parīkṣā,* which helps to elicit the factors which are responsible for the genesis of disease.

प्रकृति (Prakṛti)

तत्र प्रकृत्यादीन् भावाननुव्याख्यास्यामः। तद्यथा–शुक्रशोणितप्रकृतिं, कालगर्भाशयप्रकृतिं, मातुराहारविहारप्रकृतिं, महाभूतविकारप्रकृतिं च गर्भशरीरमपेक्षते। एतानि हि येन-येन दोषेणाधिकेनैकेनानेकेन वा समनुबध्यन्ते, तेन-तेन दोषेण गर्भोऽनुबध्यते; ततः सा सा दोषप्रकृतिरुच्यते मनुष्याणां गर्भादिप्रवृत्ता। तस्मात्श्लेष्मलाः प्रकृत्या केचित्, पित्तलाः केचित्, वातलाः केचित्, संसृष्टाः केचित्, समधातवः केचिद्भवन्ति। तेषां हि लक्षणानि व्याख्यास्यामः ॥ *C.Vi. 8/95*

शुक्रशाणितसंयोगे यो भवेद्दोष उत्कटः। प्रकृतिर्जायते तेन तस्या मे लक्षणं शृणु ॥ *S.Śā. 4/63*

It is the inherent characteristic property of an individual refers to the genetically determined physical and mental make up. It is determined by (a) sperms and ovum; (b) season and condition of the uterus; (c) food and regimens of the mother; and (d) nature of *mahābhūtās* comprising the foetus. The foetus gets afflicted with one or more of the two *doṣās,* which are dominantly associated with the above mentioned factors. *Doṣās* dominating the sperms and ovum during the time of conception and also those inhabiting the uterus at that time determine the *prakṛti* of the individual. Food and regimens of the mother, which aggravates *doṣās* at that time also determine the physical constitution. The *doṣās* that ultimately emerge as dominant factors actually determine the *prakṛti.* Season also indirectly serve as important factors for the determination of *prakṛti* in as much as they also aggravate *doṣās* in the sperms and ovum.

According to some other texts of medicine, *prakṛti* of an individual is determined on the basis of the condition of the sperms and ovum.

सप्त प्रकृतयो भवन्ति–दोषैः पृथग् द्विशःसमस्तैश्च ॥
S.Śā. 4/61

Seven types of *śāririka prakṛti* has been described namely *kaphaja, pittaja, vātaja, vāta pittaja, vāta kaphaja, kapha-pittaja* and *sannipātaja prakṛti's.*

Characteristic diagnostic parameter for the determination of *deha prakṛti* are as follows.

श्लेष्मज प्रकृति (Śleṣmaja Prakṛti)

श्लेष्मा हि स्निग्धश्लक्ष्णमृदुमधुरसारसान्द्रमन्दस्तिमितगुरुशीतविज्जलाच्छः। तस्य स्नेहाच्छ्लेष्मलाः स्निग्धाङ्गाः, श्लक्ष्णत्वाच्छ्लक्ष्णाङ्गाः, मृदुत्वाद्दृष्टिसुखसुकुमारावदातगात्राः, माधुर्यात् प्रभूतशुक्रव्यवायापत्याः, सारत्वात् सारसंहतस्थिर शरीराः, सान्द्रत्वादुपचितपरिपूर्णसर्वाङ्गाः, मन्दत्वान्मन्दचेष्टाहार-व्याहाराः, स्तैमित्यादशीघ्रारम्भक्षोभविकाराः, गुरुत्वात् साराधिष्ठितावस्थितगतयः, शैत्यादल्पक्षुत्तृष्णासंतापस्वेददोषः, विज्जलत्वात् सुश्लिष्टसारसन्धिबन्धनाः, तथाऽच्छत्वात् प्रसन्नदर्शनाननाः प्रसन्नस्निग्धवर्णस्वराश्च भवन्ति। त एवंगुणयो-गाच्छ्लेष्मला बलवन्तो वसुमन्तो विद्यावन्त ओजस्विनः शान्ता आयुष्मन्तश्च भवन्ति ॥ *C.Vi. 8/96*

श्लेष्मप्रकृतिस्तुदूर्वेन्दीवरनिस्त्रिशार्द्रारिष्टकशरकाण्डानामन्यतमवर्णः सुभगः प्रियदर्शना मधुरप्रियः कृतज्ञो धृतिमान् सहिष्णुरलोलुपा बलवांश्चिरग्राही दृढवैरश्च भवति ॥ शुक्लाक्षः स्थिरकुटिलालिनीलकेशो लक्ष्मीवान् जलद-मृदङ्गसिंहघोषः। सुत्पः सन् सकमलहंसचक्रवाकान् संपश्येदपि च जलाशयान् मनोज्ञान् ॥ रक्तान्तनेत्रः सुविभक्तगात्रः स्निग्धच्छविः सत्त्वगुणोपपन्नः। क्लेशक्षमो मानयिता गुरूणां ज्ञेयो बलासप्रकृतिर्मनुष्यः ॥ दृढशास्त्रमतिः स्थिरमित्रधनः परिगण्य चिरात् प्रददाति बहु। परिनिश्चितवाक्यपदः सततं गुरुमानकरश्च भवेत् स सदा ॥ ब्रह्मरुद्रेन्द्रवरुणैः सिंहाश्वगज-गोवृषैः। तार्क्ष्य-हंस-समानूकाः श्लेष्मप्रकृतयो नराः ॥ *S.Śā. 4/72-76*

श्लेष्मा सोमः श्लेष्मलस्तेन सौम्यो गूढस्निग्धशिलष्टसन्ध्यस्थिमांसः। क्षुत्तृड्दुःखक्लेशघर्मैरतप्तो बुद्ध्या युक्तः सात्त्विकः सत्यसन्धः ॥ प्रियङ्गुदूर्वाशर-काण्डशस्त्र-गोरोचनापद्मसुवर्णवर्णः। प्रलम्बबाहुः पृथुपीनवक्षा महाललाटो घननीलकेशः ॥ मृद्वङ्गः समसुविभक्तचारुदेहो बह्वोजोरतिरसशुक्रपुत्रभृत्यः। धर्मात्मा वदति न निष्ठुरं च जातु प्रच्छन्नं वहति दृढं चिरं च वैरम् ॥ समदद्विरदेन्द्रतुल्ययातो जलदाम्भोधिमृदङ्गसिंहघोषः। स्मृतिमानभियोगवान् विनीतो न च बाल्येऽप्यतिरोदनो न लोलः ॥ तिक्तं कषायं कटुकोष्णरूक्षमल्पं स भुङ्क्ते बलवांस्तथाऽपि। रक्तान्तसुस्निग्धविशालदीर्घः

सुव्यक्तशुक्लासितपक्ष्मलाक्षः ॥ अल्पव्याहारक्रोधपानाशनेहः प्राज्यायुर्वित्तो दीर्घदर्शी वदान्यः । श्राद्धो गम्भीरः स्थूललक्षः क्षमावानार्यो निद्रालुर्दीर्घसूत्रः कृतज्ञः ॥ ऋजुर्विपश्चित्सुभगः सुलज्जो भक्तो गुरूणां स्थिरसौहृदश्च । स्वप्ने सपद्मान्सविहङ्गमालां स्तोयाशयान् पश्यति तोयदांश्च ॥ ब्रह्मरुद्रेन्द्रवरुणतार्क्ष्यहंसगजाधिपैः । श्लेष्मप्रकृतयस्तुल्यास्तथा सिंहाश्वगोवृषैः ॥ *A.Hr.Śā. 3/96-103*

Physical Characteristics

1. Unctuous and smooth, even, well defined and good looking body.
2. Pleasing appearance with delicate and fair organs.
3. Excellent, compact and firm body.
4. Possesses deep seated, unctuous and well knit joints and muscles.
5. Dullness in action and initiation with less activities.
6. Firm stable gait due to uniform pressing of feet on earth.
7. Have long arms, big and elevated chest with big forehead.
8. Thick and blue hair.
9. Eyes are red at the angles, unctous, wide, long with well designed white and black spheres of eye parts with having more eyelashes.

Physiological

1. Due to abundant *śukra* there will be excessive desire for sexual act and will be having more children and attendants.
2. Are not much troubled by hunger, thirst, unhappiness, strain, heat, perspiration.
3. More desire in tastes and consume food which is bitter, astringent, pungent, hot, dry and less in quantity. (Still remain strong)
4. Voice is clear, high pitched melodious.
5. Less desire for foods and drinks but like sweet things.

Psychological Characteristics

1. Endowed with intelligence, right attitude, truthfulness, strength, wealth, knowledge, energy, peace, courage and longevity.
2. Righteous, benevolent nature, do not speak hard and abusive words.
3. Horbour enemity, concealed and deep for long time.
4. Possess good memory, perseverance, humbleness, do not weep much even in childhood.
5. Free from greediness and have less speech and anger.
6. Endowed with foresight and munificience.
7. Have faith in god.
8. Dignified, greatly charitable, civilized, slow, grateful, straight forward, learned, bashful, obedient to teachers and elders, forgiving nature and good at heart.
9. In dreams he sees water reservoirs with full of water, lotus, birds and clouds and pleasing to the mind in dream.
10. Slow in understanding.
11. Predominant in *satvaguṇa*.
12. Grants gifts in plenty after considering the receiver.
13. Speaks well selected words and sentences.
14. These persons imitate in their activities like *Brahma, Rudra, Indra, Varuṇa* and animals such as lion, horse, elephant, cow, bull, red eagle and swan.

पित्तज प्रकृति (Pittaja Prakṛti Characteristics)

पित्तमुष्णं तीक्ष्णं द्रवं विस्रमम्लं कटुकं च । तस्यौष्ण्यात् पित्तला भवन्त्युष्णासहा, उष्णमुखाः, सुकुमारावदातगात्राः, प्रभूतविप्लुव्यङ्गतिलपिडकाः, क्षुत्पिपासावन्तः, क्षिप्रवलीपलितखालित्यदोषाः, प्रायो मृद्वल्पकपिलश्मश्रुलोमकेशाश्च; तैक्ष्ण्यात्तीक्ष्णपराक्रमाः, तीक्ष्णाग्नयः, प्रभूताशनपानाः, क्लेशासहिष्णवो, दन्दशूकाः; द्रवत्वाच्छिथिलमृदुसन्धिमांसाः, प्रभूतसृष्टस्वेदमूत्रपुरीषाश्च; विस्रत्वात् प्रभूतपूतिकक्षास्यशिरःशरीरगन्धाः, कट्वम्लत्वादल्पशुक्रव्यवायापत्याः; त एवंगुणयोगात् पित्तला मध्यबला मध्यायुषो मध्यज्ञानविज्ञान-वित्तोपकरणवन्तश्च भवन्ति ॥ *C.Vi. 8/97*

पित्तप्रकृतिः-स्वेदनो दुर्गन्धः पीतशिथिलाङ्गस्ताम्रनख-नयन-तालु-जिह्वौष्ठ-पाणि-पादतलो दुर्भगो वलीपलितखालित्यजुष्टो बहुभुग् उष्णद्वेषी क्षिप्रकोपप्रसादो मध्यमबलो मध्यमायुश्च भवति ॥ मेधावी निपुणमतिर्विगृह्य वक्ता तेजस्वी समितिषु दुर्निवारवीर्यः । सुप्तः सन् कनक-पलाश-कर्णिकारान् सम्पश्येदपि च हुताशविद्युदुल्काः ॥ न भयात् प्रणमेदनतेष्वमृदुः प्रणतेष्वपि सान्त्वनदानरुचि । भवतीह

सदा व्यथितास्यगतिः स भवेदिह पित्तकृतप्रकृतिः ॥ भुजङ्गोलूकगन्धर्वयक्षमार्जारवानरैः । व्याघ्रर्क्षनकुलानूकैः पैत्तिकास्तु नराः स्मृताः ॥ *S.Śā. 4/68-71*

पित्तं वह्निर्वह्निजं वा यदस्मात् पित्तोद्रिक्तस्तीक्ष्णतृष्णाबुभुक्षः ।
गौरोष्णाङ्गस्ताम्रहस्ताङ्घ्रिवक्त्रः शूरो मानी पिङ्गकेशोऽल्परोमा ॥
दयितमाल्याविलेपनमण्डनः सुचरितः शुचिराश्रितवत्सलः ।
विभवसाहसबुद्धिबलान्वितो भवति भीषु गतिर्द्विषतामपि ॥
मेधावी प्रशिथिलसन्धिबन्धमांसो नारीणामनभिमतोऽल्पशुक्रकामः ।
आवासः पलिततरङ्गनीलिकानां भुक्तेऽन्नं मधुरकषायतिक्तशीतम् ॥
घर्मद्वेषी स्वेदनः पूतिगन्धिर्भूर्युच्चारक्रोधपानाशनेर्ष्यः ।
सुप्तः पश्येत्कर्णिकारान्पलाशान् दिग्दाहोल्काविद्युदर्कानलांश्च ॥
तनूनि पिङ्गानि चलानि चैषां तन्वल्पपक्ष्माणि हिमप्रियाणि ।
क्रोधेन मद्येन रवेश्च भासा रागं व्रजन्त्याशु विलोचनानि ॥
मध्यायुषो मध्यबलाः पण्डिता क्लेशभीरवः ।
व्याघ्रर्क्षकपिमार्जारयक्षानूकाश्च पैत्तिकाः ॥

A.Hr.Śā. 3/90-95

Physical Characteristics

1. White and warm body.
2. Possess coppery red palms, soles and face.
3. Have brown and scanty hair.
4. Possesses loose and lean joints and muscles.
5. Possesses grey hair, wrinkles and blue patches in skin and baldness.
6. Eyes are thin, brown, unsteady with thin and few eyelashes.
7. Eyes becoming red very quickly by anger, after drinking wine and exposure to sunlight.
8. Body parts are yellowish and flabby.
9. Copper coloured nails, eyes, palate, tongue, lips, palms and soles.
10. He is ugly and has moderate strength.

Physiological

1. Have excellent thirst and anger.
2. Consume food which is sweet, astringent, bitter and cold.
3. Hate sunlight and hot things.
4. Perspire heavily, emits bad smells from the body.
5. Expel large amount of faecal matter.
6. Eats great amount of foods and drinks heavily.
7. Strong digestive power.
8. Putrid smell from axilla, mouth, head and body in excess.
9. Moderate span of life.
10. Insufficiency of semen, sexual desire, procreation and do not like women.
11. Always in troubles like ulceration in mouth etc.

Psychological Characteristics

1. Becomes angry quickly and gets relived of it quickly.
2. Intelligent, clever, defeats others in talk, brilliant, undefeatable in assemblies.
3. Moderate spiritual, materialistic knowledge and wealth.
4. Are brave and proud and not soft towards the surrendered.
5. Desirous of consoling and granting gifts to those who are obedient.
6. These people are fond of women, garland and unguents.
7. Possesses good behavior, clean, affectionate to dependents.
8. Have more anger and jealousy.
9. In dreams he sees the flowers of *karṇikāra, palāśa* (both are red in colour), forest fire, lightening (thunder bolt), meteor, bright sunrays and fire.
10. Eyes desirous of cold comfort.
11. These persons imitate their activities and behavior with animals like tiger, bear, ape, cat, snake, owl, monkey and mungoose, *gandharva* and *yakṣa*.

वातज प्रकृति (Vātaja Prakṛti Characteristics)

वातस्तु रूक्षलघुचलबहुशीघ्रशीतपरुषविशदः । तस्य रौक्ष्याद्वातला रूक्षापचिताल्पशरीराः प्रततरूक्षक्षामसन्नसक्तजर्जरस्वरा जागरूकाश्च भवन्ति, लघुत्वाल्लघुचपलगतिचेष्टाहारव्याहाराः, चलत्वादनवस्थितसन्ध्यक्षिभ्रूहन्वोष्ठजिह्वाशिरःस्कन्धपाणिपादाः, बहुत्वाद्बहुप्रलापकण्डरासिराप्रतानाः, शीघ्रत्वाच्छ्रीघ्रसमारम्भक्षोभविकाराः शीघ्रत्रासरागविरागाः श्रुतग्राहिणोऽल्पस्मृतयश्च, शैत्याच्छीतासहिष्णवः प्रततशीतकोद्वेपकस्तम्भाः, पारुष्यात् परुषकेशश्मश्रुरोमनखदशनवदनपाणिपादाः, वैशद्यात् स्फुटिताङ्गावयवाः सततसन्धिशब्दगामिनश्च

भवन्ति; त एवं गुणयोगाद्वातलाः प्रायेणाल्पबलाश्चाल्पायुषश्चाल्पापत्याश्चाल्पसाधनाश्चाल्पधनाश्च भवन्ति ॥ *C.Vi. 8/98*

तत्र वातप्रकृतिः–प्रजागरूकः शीतद्वेषी दुर्भगः स्तेनो मत्सर्यनार्यो गान्धर्वचित्तः स्फुटितकरचरणोऽल्परूक्षश्मश्रुनखकेशः क्रोधी (क्राथीति पाठान्तरे 'हिंसाशीलः') दन्तनखखादी च भवति ॥ अधृतिरदृढसौहृदः कृतघ्नः कृशपरुषो धमनीततः प्रलापी । द्रुतगतिरटनोऽनवस्थितात्मा वियति च गच्छति संभ्रमेण संभ्रमेण सुप्तः ॥ अव्यवस्थितमतिश्चलदृष्टिमन्दराघवनसंचयमित्रः । किञ्चिदेव विलपत्यनिबद्ध मारुतप्रकृतिरेष मनुष्यः ॥ वातिकाश्चाजगोमायुशशाखूष्ट्रशुनां तथा । गृध्रकाकखरादीनामनूकैः कीर्त्तिता नराः ॥ *S.Śā. 4/64-67*

प्रायोऽत एव पवनाध्युषिता मनुष्या दोषात्मकाः स्फुटितधूसरकेशगात्राः । शीतद्विषश्चलधृतिस्मृतिबुद्धिचेष्टासौहार्ददृष्टिगतयोऽतिबहुप्रलापाः ॥ अल्पवित्तबलजीवितनिद्राः सन्नसक्तचलजर्जरवाचः । नास्तिका बहुभुजः सविलासा गीतहासमृगयाकलिलोलाः ॥ मधुराम्लपटूष्णसात्म्यकाङ्क्षाः कृशदीर्घाकृतयः सशब्दयाताः । न दृढा न जितेन्द्रिया न चार्या न च कान्तादयिता बहुप्रजा वा ॥ नेत्राणि चैषां खरधूसराणि वृत्तान्यचारूणि मृतोपमानि । उन्मीलितानीव भवन्ति सुप्ते शैलद्रुमांस्ते गगनं च यान्ति ॥ अधन्या मत्सराध्माताः स्तेनाः प्रोद्बद्धपिण्डिकाः । श्वसृगालोष्ट्रगृध्राखुकाकानूकाश्च वातिकाः ॥

A.H.Śā. 3/84-89

Physical Characteristics

1. Body is cracked and dusky.
2. Mustaches, nails, hairs are scanty and rough.
3. Thin body with prominence of veins all over the body and tall in shape.
4. Unctuousness, emaciation and dwarfness of the body.
5. Light and inconsistent gait, action and movement.
6. Unstable joints, eyes, eyebrows, jaws, lips, tongue, head, shoulder, hands and legs.
7. Production of cracking sounds in joints when they move.
8. Eyes are rough, lusterless, round, unpleasant and resemble those of dead.
9. Lids kept open while sleeping.
10. Unsteady vision and movements.
11. Abundance in tendons.
12. Possesses little strength.

Physiological Characteristics

1. Hate cold, often getting afflicted with cold, shivering and stiffness.
2. Voice is obstructed, interrupted, unsteady or harsh, long drawn, broken, dry low.
3. Desirous of habituation to sweet, sour, salty and hot foods and eat light food.

Psychological Characteristics

1. Unsteady in respect of courage, memory, thinking, friendship, movement.
2. Very talkative and speaks irrelevantly.
3. Possess little of wealth, span of life and sleep.
4. He is cruel, ungreateful.
5. Quick in walk and wanders too much.
6. Unsteady in mind.
7. Quick in initiating actions, getting irritated.
8. Quick in the onset of morbid manifestations and fear.
9. Quick in likes and dislikes.
10. Quick in understanding and forgetting things.
11. These people are atheists, gluttons, pleasure seeking.
12. Desirous of music, humor, hunting or gambling.
13. Are not steadfast, cannot control their senses, not civilized, not liked by women, not have many children.
14. Has disorganized mind and unsteady vision.
15. In dreams they sees as if they are moving in the sky, roaming in the mountains, dwelling on trees.
16. These people are non-magnanimous, bloated with jealously of stealing nature and having bulged calves.
17. They imitate the animals in their behavior like goat, dog, goyalox, rabbit, jackal, camel, vulture, crow, donkey.

संसर्गज प्रकृति (Saṁsargaja Prakṛti)

द्वयोर्वा तिसृणां वाऽपि प्रकृतीनां तु लक्षणैः ।
ज्ञात्वा संसर्गजो वैद्यः प्रकृतीरभिनिर्दिशेत् ॥

S.Śā. 4/77

संसर्गात् संसृष्टलक्षणाः ॥ *C.Vi. 8/99*

प्रकृतिर्द्वयर्वोत्था द्वन्द्वसर्वगुणोदये ।
शौचास्तिक्यादिभिश्चैवं गुणैर्गुणमयीर्वदेत् ॥
A.H.Śā. 3/104

Mixed features observed in *vāta kapha, vāta pitta, kapha pitta* and *vāta pitta kapha prakṛti (sama prakṛti)* individuals.

सम प्रकृति (Sama Prakṛti Persons)

सर्वगुणसमुदितास्तु समधातवः । *C.Vi. 8/100*

Sama prakṛti persons possesses all excellent qualities of all *dhātus*.

भौतिकी पंचमहाभूत प्रकृति (Bhautikī Pañcamahābhūta Prakṛti)

प्रकृतिमिह नराणां भौतिकीं केचिदाहुः पवनदहनतोयैः कीर्त्तितास्तास्तु तिस्रः । स्थिर-विपुलशरीरः पार्थिवश्च क्षमावान्शुचिरथ चिरजीवी नाभसः खैर्महद्भिः ॥ *S.Śa. 4/80*

Prakṛti arise from five elements i.e. *pancamahābhūtas* are as follows– One each from :

1. *Pavana (vāta)*
2. *Dahana (agni and pitta)*
3. *Toya (āpa/śleṣmā)*
4. *Pṛthvi :* All the above are characterised by strong and big body and able to withstand troubles.
5. *Nabha (Ākaśa)* manifests features like cleanliness and long life.

मानस प्रकृति (Mānasa Prakṛti)

In this majority of the features pertain to the mind and mental activities of the person. Due to their resemblance in qualities to that of almighty god names were designated accordingly. Totally 16 types of *mānasika prakṛti's* are described.

I. सात्विक काय मानस प्रकृति– 7 (Sātvika Kāya Mānasa Prakṛti)

शौचमास्तिक्यमभ्यासो वेदेषु गुरुपूजनम् ।
प्रियातिथित्वमिज्या च ब्रह्मकायस्य लक्षणम् ॥
माहात्म्यं शौर्यमाज्ञा च सततं शास्त्रबुद्धिता ।
भृत्यानां भरणं चापि माहेन्द्र कायलक्षणम् ॥
शीतसेवा सहिष्णुत्वं पैङ्गल्यं हरिकेशता ।
प्रियवादित्वमित्येतद्वारुणं कायलक्षणम् ॥
मध्यस्तथा सहिष्णुत्वमथस्यागमसञ्चयौ ।
महाप्रसवशक्तित्वं कौबेरं कायलक्षणम् ॥
गन्धमाल्यप्रियत्वं च नृत्य-वादित्र-कामिता ।
विहारशीलता चैव गान्धर्वं कायलक्षणम् ॥
प्राप्तकारी दृढोत्थानो निर्भयः स्मृतिमाञ्छुचिः ।
रागमोहमदद्वेषैर्वर्जितो याम्यसत्त्ववान् ॥
जपव्रतब्रह्मचर्यहोमाध्ययनसेविनम् ।
ज्ञान-विज्ञान-सम्पन्नमृषिसत्त्वं नरं विदुः ।
सप्तैते सात्त्विकाः कायाः॥
S.Śa. 4/81-88

1. ब्रह्मकाय
2. माहेन्द्र काय
3. वरुण काय
4. कुबेर काय
5. गन्धर्व काय
6. याम्य काय
7. ऋषि सत्व काय

सात्विक काय (Sātvika Kāya)– 7 in number

1. ब्रह्मकाय (Brahmakāya)

The features of *Brahmakāya* are as follows–

- Cleanliness
- Worshipping
- Belief in God
- Indulging in fire sacrifices
- Scriptures
- Purity, love for truth
- Regular practice of *vedās*

2. माहेन्द्रकाय (Māhendra Kāya)

Features of *Māhendra kāya* are as follows–

- Glory
- Courage
- Commanding
- Having knowledge of sciences
- Kindness towards serpents

3. वरूण काय (Varuṇa Kāya)

Features of *Varuṇa kāya* are as follows–

- Desire for cold
- Forbearance
- Colour of the body, eyes and hairs are brownish in colour
- Speaks affectionately

4. कुबेर काय (Kubera Kāya)

The features of *Kubera kāya* are as follows–

- Adoptance of middle path in all activities
- Capacity to withstand difficulties
- Aquisition of wealth
- Capacity to produce many offsprings.

5. गन्धर्व काय (Gandharva Kāya)

The features of *Gandharva Kāya* are as follows–

- Fondness towards perfumes and garlands
- Desirous of dance and playing musical instruments
- Likes to visit various picnic spots.

6. याम्य सत्व (काय) [Yāmya Satva (Kāya)]

The features of *Yāmya kāya* are as follows–

- Cleanliness
- Performance of right actions with strong determination
- Full of courage
- Excellent memory
- Cleanliness
- Devoid of passion
- Delusion
- Infatuation and hatredness

7. ऋषि सत्व (काय) [Ṛṣi Satva (Kāya)]

Features of *Ṛṣi Satva* are as follows–

- Involving in constant meditation
- Vows
- Celibacy
- Fire sacrifice
- Study of scriptures
- Possessed with general and special knowledge

II. राजस काय मानस प्रकृति–6

राजसांस्तु निबोध मे।
एश्वर्यवन्तं रौद्रं च शूरं चण्डमसूयकम्।
एकाशिनं चौदरिक–(औपधिक 'पा.')।
मासुरं सत्त्वमीदृशम्॥
तीक्ष्णमायासिनं भीरुं चण्डं मायाऽन्वितं तथा।
विहाराचारचपलं सर्पसत्त्वं विदुर्नरम्॥
प्रवृद्धकामसेवी चाप्यजस्राहार एव च।
अमर्षणोऽनवस्थायी शाकुनं कायलक्षणम्॥
एकान्तग्राहिता रौद्र (रौक्ष्य 'पा.) मसूया धर्मबाह्यता।
भृशमात्रतमश्चापि राक्षसं कायलक्षणम्॥
उच्छिष्टाहारता तैक्ष्ण्यं साहसप्रियता तथा।
स्त्रीलोलुपत्वं नैर्लज्ज्यं पैशाचं कायलक्षणम्॥
असंविभागमलसं दुःखशीलमसूयकम्।
लोलुपं चाप्यदातारं प्रेतसत्त्वं विदुर्नरम्।
षडेते राजसाः कायाः॥

Śā. 4/88-94

1. आसुर सत्व
2. सर्प सत्व
3. शकुन काय
4. राक्षस काय
5. पिशाच काय
6. प्रेतसत्व काय

1. आसुर काय (सत्व) [Āsura Kāya (Satva)]

The features of *Āsura kāya* are as follows–

- Full of wealth
- Terrifying look
- Courageous
- Angry
- Jealous
- Likes to take food in loneliness
- Consumes large quantity of food

2. सर्प काय (सत्व) [Sarpa Kāya (Satva)]

The features of *Sarpa kāya* are as follows–

- Quick in actions
- Gets tired quickly
- Fearful
- Angry
- Deceiving
- Unsteady
- Desirous of recreation

3. शकुन काय (सत्व) *[Śakuna Kāya (Satva)]*

The features of *Śakuna kāya* are as follows–

- Indulging in sexual pleasures in excess
- Consumes food without break
- Impatient
- Roaming around constantly

4. राक्षस काय (सत्व) [Rākṣasa Kāya (Satva)]

The features of *Rākṣasa kāya* are as follows–

- Understands things without others support
- Terrifying look
- Jealous

- Violating the stipulated norm
- Flattering himself greatly

5. पिशाच काय (सत्व) [Piśāca Kāya (Satva)]

The features of *Piśāca kāya* are as follows–

- Intake of food which has been discarded by others
- Cruelty
- Fond of adventures
- Desirous of women
- Lack of shyness

6. प्रेतकाय (सत्व) [Preta Kāya (Satva)]

The features of *Preta kāya* are as follows–

- Doesn't share anything with others
- Lazyness
- Always full of grief
- Jealous
- Sensuous
- Doesn't give anything to others

III. तामस काय मानस प्रकृति–3

तांमसांस्तु निबोध मे।
दुर्मेधस्त्वं मन्दता च स्वप्ने मैथुननित्यता।
निराकरिष्णुता चैव विज्ञेयाः पाशवा गुणाः॥
अनवस्थितता मौर्ख्यं भीरुत्वं सलिलार्थिता।
परस्पराभिमर्दश्च मत्स्यसत्त्वस्य लक्षणम्॥
एकस्थानरतिर्नित्यमाहारे केवले रतः।
वानस्पत्यो नरः सत्त्वधर्मकामार्थवर्जितः॥
इत्येते त्रिविधाः कायाः प्रोक्ता वै तामसास्तथा।
कायानां प्रकृतीर्ज्ञात्वा त्वनुरूपां क्रियां चरेत्॥
महाप्रकृतयस्त्वेता रजःसत्त्वतमःकृताः।
प्रोक्ता लक्षणतः सम्यग्भिषक् ताश्च विभावयेत्॥

S.Śa. 4/94-99

1. पशु सत्व
2. मत्स्य सत्व
3. वानस्पत्य काय

1. पशु काय (सत्व) [Paśu Kāya (Satva)]

The features of *Paśu kāya* are as follows–

- Bad thinking
- Sluggish activities
- Dreams everyday as indulging in copulation
- Denies everything

2. मत्स्य काय (सत्व) [Matsya Kāya (Satva)]

The features of *Matsya Kāya* are as follows–

- Unsteadiness
- Idiotism
- Desire for water
- Fighting with one another

3. वानस्पत्य काय (सत्व) [Vānaspatya Kāya (Satva)]

The features of *Vānaspatya kāya* are as follows–

- Always likes to sit in one particular place
- Consumes food oftenly
- Doesn't follow truthfulness and righteousness
- Devoid of lust and wealth

महाप्रकृतयस्त्वे रजः सत्वतमः कृताः।
प्रोक्ता लक्षणतः सम्यग्भिषक् ताश्च विभावयेत्॥

S.Śā 4/98-99

After proper understanding of *kāya prakṛti's* one should initiate appropriate therapy. *Mahāprakṛti's* are those which manifests due to influence of *satva, raja* and *tama* and knowledge of the constitution is very much essential.

त्रिविधं सत्वमुद्दिष्टं कल्याणक्रोधमोहजम्।
श्रेष्ठमध्याधमत्वं च तेषां प्रोक्तां यथाक्रमम्।
अष्ट सत्प त्रिधा चैषां क्रमाद्भेदः प्रवक्ष्यते।
सत्वानां, सत्वविज्ञानं हितमौषध कल्पने॥

K.S.Su 28/89

Three types of psyche are described to be born from virtue, anger and delusion these are said to be superior, medium and inferior respectively. Eight, seven and three respectively are said to be the types of these psyche. To prescribe medicines, knowledge of this is essential.

Description of Mānasa Prakṛti in Caraka Saṁhitā

त्रिविधं खलु सत्त्व-शुद्धं, राजसं, तामसमिति। तत्र शुद्धमदोषमाख्यातं कल्याणांशत्वात्, राजसं सदोषमाख्यातं रोषांशत्वात्, तामसमपि सदोषमाख्यातं मोहांशत्वात्। तेषां तु त्रयाणामपि सत्त्वानामेकैकस्य भेदाग्रमपरिसङ्ख्येयं तरतमयोगा-

च्छरीरयोनिविशेषभ्यश्चान्योन्यानुविधानत्वाच्च। शरीरं ह्यापि सत्त्वमनुविधीयते, सत्त्वं च शरीरम्। तस्मात् कतिचित्सत्त्वभेदाननूकाभिनिर्देशेन निदर्शनार्थमनुव्याख्यास्यामः। *C. Śā 4/36*

The psyche is of three types–*śuddha*, *rājas* and *tāmasa*. The *śuddha* is said to be devoid of defects due to having beneficial fraction, whereas *rājasa* and *tāmasa* are defective because of the fractions of agitation and ignorance respectively. Out of these three types of psyche, each one has got innumerable subdivisions due to relative degrees and variations in interaction of psyche and body according to species. Body follows psyche and vice versa. Hence some of the types of psyche are described here as illustrations by showing their similarity with some well-known symbols.

शुद्ध प्रकृति (**Śuddha Prakṛti**)

ब्राह्य सत्व [**Brāhmya Satva (Sharing the Traits of Brahmā)**]

तद्यथा–शुचिं सत्याभिसन्धं जितात्मानं संविभागिनं ज्ञानविज्ञानवचनप्रतिवचसंपन्नं स्मृतिमन्तं कामक्रोधलोभमानमोहेर्ष्याहर्षामर्षापेतं समं सर्वभूतेषु ब्राह्मं विद्यात्।

C. Śā 4/36 (01)

1. Purity, love for truth, self-controlled.
2. Power of discrimination, material and spiritual knowledge.
3. Power of exposition, reply and memory.
4. Devoid of passion, anger, greed, ego, ignorance, jealousy, dejection and intolerance.
5. Favorable disposition equally for all creatures.

आर्ष सत्व [**Ārṣa Satva (Sharing the traits of Ṛṣis)**]

इज्याध्ययनव्रतहोमब्रह्मचर्यपरमतिथिव्रतमुपशान्तमदमानरागद्वेषमोहलोभरोषं प्रतिभावचनविज्ञानोपधार-णशक्तिसंपन्नमार्षं विद्यात्। *C. Śā 4/36 (02)*

1. Devotion to sacred rituals, study, sacred vows, oblations and celibacy.
2. Devoted to guests.
3. Freedom from pride, ego, attachment, hatred, ignorance, greed and anger.
4. Intellectual excellence and eloquence.
5. Endowed with power of understanding and retention.

एन्द्र सत्व [**Aendra Satva (Sharing the traits of Indra)**]

ऐश्वर्यवन्तमादेयवाक्यं यज्वानं शूरमोजस्विनं तेजसोपेतमक्लिष्टकर्माणं दीर्घदर्शिनं धर्मार्थकामाभिरतमैन्द्रं विद्यात्॥

C. Śā 4/36 (03)

1. Lord-ship and authoritative speech.
2. Performance of sacred rituals.
3. Bravery, strength magnificent and impressive appearance
4. Freedom from mean acts.
5. Fore sightedness.
6. Devotion to virtuous acts, earning of wealth and proper satisfaction of desires.

याम्य सत्व [**Yāmya Satva (Sharing the traits of Yama)**]

लेखास्थवृत्तं प्राप्तकारिणमसंप्रहार्यमुत्थानवन्तं स्मृतिमन्तमैश्वर्यलम्भिनं व्यपगतरागेर्ष्याद्वेषमोहं याम्यं विद्यात्।

C. Śā 4/36 (04)

1. Observance of the propriety of actions.
2. Acting in opportune moment
3. Non-violability.
4. Readiness for initiating action.
5. Memory and lordship.
6. Freedom from attachment, envy, hatred and ignorance.

वरुण सत्व [**Vāruṇa Satva (Sharing the traits of Varuṇa)**]

शूरं धीरं शुचिमशुचिद्वेषिणं यज्वानमम्भोविहाररतिमक्लिष्टकर्माणं स्थानकोपप्रसादं वारुणं विद्यात्। *C. Śā 4/36 (05)*

1. Bravery, patience, purity and dislike for impurity.
2. Observance of religious rites.
3. Fondness for acquatic sports.
4. Aversion for mean-acts.
5. Exhibition of anger and pleasure in proper place.

कौबेर सत्व [**Kaubera Satva (Sharing the traits of Kubera)**]

स्थानमानोपभोगपरिवारसंपन्नं धर्मार्थकामनित्यं शुचिं सुखविहारं व्यक्तकोपप्रसादं कौबेरं विद्यात्। *C. Śā 4/36 (06)*

1. Possession of position, honour, luxuries and attendants.
2. Constant liking for virtuous acts, wealth and satisfaction of desires.
3. Purity
4. Liking for pleasures of recreation.
5. Manifest anger and favour.

गन्धर्व सत्व [Gandharva Satva (Sharing the traits of Gandharva)]

प्रियनृत्यगीतवादित्रोल्लापकश्लोकाख्यायिकेतिहासपुराणेषु कुशलं गन्धमाल्यानुलेपनवसनस्त्रीविहारकामनित्यमनसूयकं गान्धर्वं विद्यात् । *C. Śā 4/36 (07)*

1. Fondness for dancing, singing, music and praise.
2. Expertness in poetry, stories, historical narrations and epics.
3. Constant fondness for scents, garlands, unguents, apparel, association of women and passion.

इत्येवं शुद्धस्य सत्त्वस्य सप्तविधं भेदांशं विद्यात् कल्याणांशत्वात्; तत्संयोगात्तु ब्राह्ममत्यन्तशुद्धं व्यवस्येत् । *C. Śā 4/37*

Of the seven types of *śātvika* mental faculties described above, the one likened to *Brahmā* is the purest.

राजसिक प्रकृति (Rājasika Prakṛti)

The *rājasika* type of mental faculty represents wrathful disposition and is of six types. Their characteristic features are furnished in the statement given below :

आसुर सत्व [Āsura Satva (Sharing the traits of Āsura)]

शूरं चण्डमसूयकमैश्वर्यवन्तमौपधिकं रौद्रमननुक्रोशमात्मपूजकमासुरं विद्यात् । *C. Śā 4/37 (01)*

1. Bravery, cruelty, envy, lordship, movement in disguise, terrifying appearance and ruthlessness.
2. Indulgence in self-praise.

राक्षस सत्व [Rākṣasa Satva (Sharing the traits of Rākṣasa)]

अमर्षिणमनुबन्धकोपं छिद्रप्रहारिणं क्रूरमाहारातिमात्ररुचिमामिषप्रियतमं स्वप्नाया सबहुलमीर्ष्ये राक्षसं विद्यात् । *C. Śā 4/37 (02)*

1. Intolerance, constant anger,violence at weak points, cruelty, gluttonous habit and fondness for non-vegetarian food.
2. Excessive sleep and physical exertions.
3. Envious disposition.

पैशाच सत्व [Paiśāca Satva (Sharing the traits of Piśāca)

महाशनं स्त्रैणं स्त्रीरहस्काममशुचिं शुचिद्वेषिणं भीरुं भीषयितारं विकृतविहाराहारशीलं पैशाचं विद्यात् । *C. Śā 4/37 (03)*

1. Gluttonous habit.
2. Fondess for women.
3. Liking for staying with women in lonely place.
4. Unclean habits, disliking for cleanliness.
5. Cowardice and terrifying disposition.
6. Resorting to abnormal diet and regimens.

सर्प सत्व [Sarpa Satva (Sharing the traits of Sarpa or Snake)

क्रुद्धशूरमक्रुद्धभीरुं तीक्ष्णमायासबहुलं संत्रस्तगोचरमाहारविहारपरं सार्पं विद्यात् । *C. Śā 4/37 (04)*

1. Bravery when in wrathful disposition and timid otherwise.
2. Sharp reaction.
3. Excessive indolence.
4. Walking, taking food and resorting to other regimens with a fearful disposition.

प्रेत सत्व [Preta Satva (Sharing the traits of Preta)]

आहारकाममतिदुःखशीलाचारोपचारमसूयकमसंविभागिनमतिलोलुपकर्मशीलं प्रैतं विद्यात् । *C. Śā 4/37 (05)*

1. Excessive desire for food.
2. Troublesome conduct, behaviour and management.
3. Enviousness.
4. Actions without discrimination, excessive greediness and inaction.

शाकुन सत्व [Śākuna Satva (Sharing the traits of a Śakuni or bird)]

अनुषक्तकाममजस्त्रमाहारविहारपरमनवस्थितममर्षणमसंचयं शाकुनं विद्यात् । *C. Śā 4/37 (06)*

1. Attachment with passion,
2. Constantly indulged in food and pass times

3. Unsteadiness, ruthlessness and unacquisitiveness.

तामसिक प्रकृति (Tāmasika Prakṛti)

The *tāmasika* type of mental faculty represents ignorant disposition and is of three types. Their characterisitc features are furnished in the statement given below:

पाशव सत्व [Pāśava Satva (Sharing the traits of Pāśava)]

निराकरिष्णुममेधसं जुगुप्सिताचाराहारं मैथुनपरं स्वप्नशीलं पाशवं विद्यात् । *C. Śā 4/38 (01)*

1. Forbidding disposition.
2. Lack of intelligence.
3. Hateful conduct and food habit.
4. Excessive sexual indulgence and sleep.

मत्स्य सत्व [Matsya Satva (Sharing the traits of a fish)

भीरुमबुधमाहारलुब्धमनवस्थितमनुषक्तकामक्रोधं सरणशीलं तोयकामं मात्स्यं विद्यात् । *C. Śā 4/38 (02)*

1. Cowardice, unwise, greediness for food, unsteadiness, constant passionate and anger.
2. Fondness for constant movement and desire for water

वानस्पत्य सत्व [Vānaspatya Satva (Sharing the traits of vegetable life)]

अलसं केवलमभिनिविष्टमाहारे सर्वबुद्ध्यङ्गहीनं वानस्पत्यं विद्यात् । *C. Śā 4/38 (03)*

Idle, indulgence in food, deficiency of all the intellectual faculties and devoid of body actions.

इत्येवं तामसस्य सत्वस्य त्रिविधं भेदांशं विद्यान्मोहांशत्वात् ।
C. Śā 4/39

Ignorance is common feature among all types of *tāmasa satva.*

Innumerability of the types of mental faculties

इत्यपरिसंख्येयभेदानां त्रयाणामापि सत्त्वानां भेदैकदेशो व्याख्यातः, शुद्धस्य सत्त्वस्य सप्तविधो ब्रह्मर्षिशक्रयमवरुण-कुबेरगन्धर्वसत्त्वानुकारेण, राजसस्य षड्विधो दैत्यपिशाचराक्षस-सर्पप्रेतशकुनि सत्त्वानुकारेण, तामसस्य त्रिविधः पशुमत्स्यवन-स्पतिसत्त्वानुकारेण, कथं च यथासत्त्वमुपचारः स्यादिति ।
C. Śā 4/40

The three types of mental faculties have innumerable varieties. The *sātvika* type of mental faculty is of seven types depending upon the dispositions of *Brahmā, Ṛṣi, Indra, Yama, Varuṇa, Kubera* and *Gandharva.* The *rājasa* type of mental faculty is of six types depending upon the dispositions of *Āsura, Rākṣasa, Piśāca, Sarpa, Preta* and *Śakuni.* The *tāmasa* type of mental faculty is of three types depending upon the dispositions of *paśu* (animal), *matsya* (fish) and *vanaspati* (vegetable life).

All these descriptions are made with a view to indicate the general mode of treatment that should be provided for these types of persons.

Sañcarasthāna, Vyaktasthāna, Udbhavasthāna, Svabhāva, Prabhāva, Sādhyatā-asādyatā, Rogamārga, Rogabheda

3. सार परीक्षा (Examination of Sāra)

सारशब्देन विशुद्धतरो धातुरुच्यते । *Cakrapāṇi*

सारतश्चेति साराण्यष्टौ पुरुषाणां बलमानविशेषज्ञानार्थमुपदिश्यन्ते; तद्यथा–त्वग्रक्तमांसमेदोऽस्थिमज्जशुक्रसत्त्वानीति ॥
C.Vi. 8/102

Sāra (Examination of essence of all *dhātus*) : The purest of *dhātus* which are of best quality. It is defined as the *dhātus* based on *deha prakṛti* (biophysical constitution) depending upon the predominance of particular *dhātu* in respect of good quantity. The physical and physiopsy-chological characteristics of different *sāra,* described in texts are the reflection of states of *dhātu sāra,* in the form of structure and functions. It is defined as tissue vitality, tissue quality, as tone of system, constitutional essence, as essence or excellence or purity of *dhātu,* as *stamina.* According to modern knowledge *sāra* can be considered as the optimum degree of genetic code of an individuals DNA with respect to particular *dhātu*. Genetic code is the system of storage of genetic information's in chromosomes of living cells that instruct the machinery for polypeptide synthesis to insert a particular amino acid in response to the nucleotide sequence of genetic material.

In our body every individual's DNA has the different genetic codes. So, we can say, the quality of *dhātus* of every individual will depend upon the genetic code of the individual's DNA. If the genetic code of the individual's DNA with respect to that *dhātu* is optimum, the formation of the particular *dhātu* in the body will be of very good quality.

Sarva sāra puruṣa has the optimum degree of the genetic code with respect to all *dhātus.*

Individuals on the basis of *sāra* have been classified into various categories depending upon the predominance and quality of particular *dhātu* in the body, except the *satva sāra,* which is based on predominance of *satva* (psychic factor) in the

S. No.	Caraka Saṁhitā	Suśruta Saṁhitā	Aṣṭāṅga Saṁgraha	Aṣṭāṅga Hṛdaya	Kāśyap Saṁhitā	Brihat Saṁhitā
1.	Tvak Sāra	Satva Sāra	Tvak Sāra	Tvak Sāra	Tvak Sāra	Meda Sāra
2.	Rakta Sāra	Śukra Sāra	Rakta Sāra	Rakta Sāra	Rakta Sāra	Majjā Sāra
3.	Māṁsa Sāra	Majjā Sāra	Māṁsa Sāra	Māṁsa Sāra	Māṁsa Sāra	Tvak Sāra
4.	Meda Sāra	Asthi Sāra	Meda Sāra	Meda Sāra	Meda Sāra	Asthi Sāra
5.	Asthi Sāra	Meda Sāra	Asthi Sāra	Asthi Sāra	Asthi Sāra	Śukra Sāra
6.	Majjā Sāra	Māṁsa Sāra	Majjā Sāra	Majjā Sāra	Majjā Sāra	Rudhir Sāra
7.	Śukra Sāra	Rakta Sāra	Śukra Sāra	Śukra Sāra	Śukra Sāra	Māṁsa Sāra
8.	Satva Sāra	Tvak Sāra	Satva Sāra	Satva Sāra	Oja Sāra	
9.					Satva Sāra	

Note : The *Sāra* Typology, the *rasa sāra* is not described directly and its is described as *tvak sāra*, probably due to the reason that *rasa dhātu* are primarily and best manifested in the *tvak. Dalhāṇa* clarifies in his commentary that in *tvak sāra*, the meaning of *tvak* is the *rasa* residing in *tvak.*

Importance of *Sāra* : It is remarkable that Āyurvedic *ācāryas* have mentioned *'sāra'* for the assessment of *bala* and *āyu* of the patient. *Bala* means biological strength or power of resistance against the diseases; it can be correlated with the immunity of the individual. As the predominance of particular *dhātu,* the number of *dhātu sāra* present in the body of an individual will be directly proportional to the power of resistance of an individual. That's why *sarva sāra* individual have relatively higher resistance in comparison to *madhyama* and *avara (sāra)* individuals. The person possessing all the *sāras* but predominating in one will possess more resistance against the diseases that may arise due to its absence.

It can be recognized that the person of particular *sāra* will have more resistance against the disease produced by the particular *dhātu.* This view was supported by *Kāśyapā Saṁhitā,* i.e., *tvak sāra* children have disease free *tvak* and their skin is capable of rapid healing of wounds.

Significance of Sāra Examination

कथं नु शरीरमात्रदर्शनादेव भिषङ्युह्येदयमुपचितत्वाद्बलवान्, अयमल्पबलः कृशत्वात्, महाबलोऽयं महाशरीरत्वात्, अयमल्पशरीरत्वादल्पबल इति; दृश्यन्ते ह्यल्पशरीराः कृशाश्चैके बलवन्तः; तत्र पिपीलिकाभारहरणवत् सिद्धिः। अतश्च सारतः परीक्षेतेत्युक्तम् ॥ *C.Vi. 8/115*

Caraka has emphasized that sometimes the physicians may take a wrong decision only by seeing the body of the patient such as strong because of being corpulent; weak because of leanness, very weak because of possessing small body. But realistically it is observed that some persons possess small body and leanness but they are strong. They are like ants that have small body and look emaciated but can carry too heavy a load. Big and corpulent persons may have less strength than the lean and short body, like elephant having big and corpulent body possessing less strength that the lean and short bodies lion.

The eight subtypes of *sāra* may be assessed in terms of relative quality i.e., *sarva sāra puruṣa/ pravara sāra puruṣa* (superior), *madhyama sāra* (moderate) and *asāra/avara* (inferior). The characteristic properties are as follows:–

सर्वसार या प्रवर सार पुरुष (Sarva Sāra/Pravara Sāra Puruṣa)

तत्र सर्वैः सारैरुपेताः पुरुषा भवन्त्यतिबलाः परमसुखयुक्ताः क्लेशसहाः सर्वारम्भेष्वात्मनि जातप्रत्ययाः कल्याणाभिनिवेशिनः स्थिरसमाहितशरीराः सुसमाहितगतयः सानुनादस्निग्धगम्भीर-महास्वराः सुखैश्वर्यवित्तोपभोगसंमानभाजो मन्दजरसो मन्दविकाराः प्रायस्तुल्यगुणविस्तीर्णापत्याश्चिरजीविनश्च ॥ *C.Vi. 8/111*

These persons have all the *dhātus* in abundance and of good quality. They are endowed with great biological strength, absolute happiness, endurance against difficulties, self confidence in all enterprises, inclination, benevolent acts, firm and balanced body, well balanced gait, nature of voice is resonant, unctuous, serious and high pitched happiness, supremacy, wealth, enjoyments, honour, delay of ageing, low degree of pathogenesis, minimum diseases, numerous offspring's of identical qualities and longevity, presence of great respect, hope of success in all activities, capacity of with standing troubles, wisdom and steadiness.

मध्यम सार पुरुष (Madhyama Sāra Puruṣa)

मध्यानां मध्यैः सारविशेषैर्गुणविशेषा व्याख्याता भवन्ति ॥

C.Vi. 8/113

Moderate amount of different *sāra* possess qualities of respective *sārās* in moderate degree and shows characteristic of *sarva sāra* moderately.

असार या अवरसार पुरुष (Asāra/Avara Sāra Puruṣa)

अतो विपरीतास्त्वसाराः ॥ *C.Vi. 8/112*

These persons having least amount of different *sāra*, possess qualities of respective *sārās* in lowest degree and show none or least characteristics of *sarva sāra*. So, all 8 subtypes of *sāra* must be analysed as *sarva sāra, madhyama sāra* and *avara sāra* by routine clinical examinations.

त्वक् सार पुरुष (Tvak Sāra Puruṣa)

सुप्रसन्नमृदुत्वग्रोमाणं त्वक्सारं विद्यादिति येषां।

S.Su. 35/16

त्वगग्रोगरहितो भोगी प्रसन्नव्यञ्जनच्छविः।
सद्यः क्षत प्ररोहश्च त्वक्सारः सुतनूरुहः॥

K.S.Su. 28/37

तत्र स्निग्धश्लक्ष्णमृदुप्रसन्नसूक्ष्माल्पगम्भीरसुकुमारलोमा सप्रभेव च त्वक् त्वक्साराणाम्। सा सारता सुखसौभाग्यैश्वर्योपभोगबुद्धिविद्यारोग्यप्रहर्षणान्यायुष्यत्वं चाचष्टे॥

C.Vi. 8/103

Physical Characteristics

1. Have unctuous, smooth, soft, clear, fine, less numerous, deep rooted and tender hair along with lustrous skin.
2. Skin and hairs are good looking and soft.
3. Clear and sharp features in relation to lustre and complexion

Physio-psychological Characteristics

1. Endowed with happiness, good fortunes, power, enjoyment, intellect, knowledge, health, excitement and longevity.
2. Pleasure seeking.
3. Free from skin diseas.
4. Wounds heal quickly.

रक्तसार पुरुष (Raktasāra Pursuṣa)

कर्णाक्षिमुखजिह्वानासौष्ठपाणिपादतलनखललाटमेहनं स्निग्धरक्तवर्णं श्रीमद्भ्राजिष्णु रक्तसाराणाम्। सा सारता सुखमुद्धतां मेधां मनस्वित्वं सौकुमार्यमनतिबलमक्लेशसहिष्णुत्वमुष्णासहिष्णुत्वं चाचष्टे ॥ *C.Vi. 8/104*

स्निग्धताम्रनखनयनतालुजिह्वौष्ठपाणिपादतलं रक्तेन।

S.Su. 35/16

Physical Characteristics

1. Ears, eyes, face, tongue, nose, lips, sole of the hands and feet, nails, forehead and genital organs are red in colour, beautiful dazzling appearance along with unctousness.
2. Unctuous and coppery red coloured nails, eyes, palate, tongue, lips, palms and soles.

Physio-psychological Characteristics

1. These individuals endowed with happiness, great genius, enthusiastic, tender.
2. Moderate strength and inability to face difficult situations.
3. Their body remains hot.

मांस सार पुरुष (Māṁsa Sāra Puruṣa)

शङ्खललाटकृकाटिकाक्षिगण्डहनुग्रीवास्कन्धोदरकक्षवक्षःपाणिपादसन्धयः स्थिरगुरुशुभमांसोपचिता मांससाराणाम्। सा सारता क्षमां धृतिमलौल्यं वित्तं विद्यां सुखमार्जवमारोग्यं बलमायुश्च दीर्घमाचष्टे ॥ *C.Vi. 8/105*

अच्छिद्रगात्रं गूढास्थिसन्धिं मांसोपचितञ्च मांसेन।

S.Su. 35/16

Physical Characteristics

1. Stable, heavy, compact, beautiful, handsome and plumpness of temples, forehead, nape, eyes, cheeks, jaws, neck, shoulder, abdomen, axillae, chest and joints of upper and lower limbs being covered with flesh.
2. Has well grown body, bones and bony joints.
3. Concealed and well developed muscles observed all over body.

Physio-psychological Characteristics

1. These individuals endowed with forgiveness, patience, non greediness, wealth, knowledge, happiness, simplicity, health, strength and longevity.

मेद सार पुरुष (Meda Sāra Puruṣa)

वर्णस्वरनेत्रकेशलोमनखदन्तौष्ठमूत्रपुरीषेषु विशेषतः स्नेहो मेदःसाराणाम्। सा सारता वित्तैश्वर्यसुखोपभोगप्रदानान्यार्जवं सुकुमारोपचारतां चाचष्टे ॥ *C.Vi. 8/106*

स्निग्धमूत्रस्वेदस्वरं बृहच्छरीरमायासासहिष्णुं मेदसा।

S.Su. 35/16

Physical Characteristics

1. Characterized by the abundance of unctuousness in complexion, voice, eyes, hair and head and other parts of body, nail, teeth, lips, urine and feces.
2. Big size body

Physio-psychological Characteristics

1. These individuals possesses wealth, power, happiness, enjoyment, charity, simplicity & delicate habits.
2. His urine and sweet are unctuous.
3. Pleasant voice.
4. Unable to tolerate exertion

अस्थि सार पुरुष (Asthi Sāra Puruṣa)

पार्ष्णिगुल्फजान्वरत्निजत्रुचिबुकशिरःपर्वस्थूलाः स्थूलास्थिनखदन्ताश्चास्थिसाराः। ते महोत्साहाः क्रियावन्तः क्लेशसहाः सारस्थिरशरीरा भवन्त्यायुष्मन्तश्च ॥ *C.Vi. 8/107*

महाशिरःस्कन्धं दृढदन्ताहन्वस्थिनखमस्थिभिः।

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Physical Characteristics

1. These people are characterized by robust heels, ankles, knees, fore-arms, collar bones, chin, head, joints, bones, nails and teeth.
2. Has big head and shoulders.
3. Firm teeth, lower jaw, bones and nails.

Physio-psychological Characteristics

1. These individuals are enthusiastic and active are endowed with strong and firm bodies along with longevity.

मज्जा सार पुरुष (Majjā Sāra Puruṣa)

मृद्वङ्गा बलवन्ताः स्निग्धवर्णस्वराः स्थूलदीर्घवृत्तसन्धयश्च मज्जसाराः। ते दीर्घायुषो बलवन्तः श्रुतवित्तविज्ञानपत्य-संमानभाजश्च भवन्ति ॥ *C.Vi. 8/108*

अकृशमुमत्तबलं स्निग्धगम्भीरस्वरं सौभाग्योपपन्नं महानेत्रञ्च मज्ज्ञा। *S.Su. 35/16*

Physical Characteristics

1. These individuals characterized by softness of organs, strength, unctuous, complexion and voice
2. Robust long and rounded joints.
3. Has wide eyes.

Physio Psychological Characteristics

1. Pleasant and deep voice
2. Lustrous
3. Endowed with longevity, strength, learning, wealth, knowledge, progeny and honour.

शुक्र सार पुरुष (Śukra Sāra Puruṣa)

सौम्याः सौम्यप्रेक्षिणः क्षीरपूर्णलोचना इव प्रहर्षबहुलाः स्निग्धवृत्तसारसमसंहतशिखरदशनाः प्रसन्न-स्निग्धवर्णस्वरा भ्राजिष्णवो महास्फिचश्च शुक्रसाराः। ते स्त्रीप्रियोपभोगा बलवन्तः सुखैश्वर्यारोग्य-वित्तसंमानापत्यभाजश्च भवन्ति ॥ *C.Vi. 8/109*

स्निग्धसंहतश्वेतास्थिदन्तनखं बहुलकामप्रजं शुक्रेण।

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If person fulfills maximum criteria from following points, then that person may be diagnosed as *śukrasāra puruṣa.*

(A) Physical Characteristics

Sl. No.	Body Part		Yes	No
1.	Face	*Saumya* (Gentle & Cool)		
2.	Look	*Saumya Prekṣiṇa* (Gentle look)		
3.	Eyes	*Kṣīra Pūrṇa Locana* (As milk is pouring down from eyes with pleasant look)		
4.	Teeth	*Snigdha, Vṛtta, Sāra, Sama, Saṁhata Śikara Daśana* (Unctous, rounded, strong, uniform, firm with elevated margins and good look)		
5.	Nails	*Snigdha, Saṁhata Sveta* (Unctous, firm with white colour)		
6.	Bone	*Snigdha, Saṁhata, Sveta* (Unctous, firm with white colour)		
7.	Buttocks	*Mahāspik* (large buttocks)		
8.	Appearance	*Bhrājiṣṇu* (Lustrous and dazzling appearance), *Subhaga* (Smart), *Rupavān* (Handsome)		
9.	Varṇa	*Prasanna* and *Snigdha* (Clear & unctuous)		

Physio-psychological characteristics :

Sl. No.	Characteristics	Yes	No
1.	*Praharṣa bahula* (marked penile erection/ great power of coitus)		
2.	*Bahula kāma* (excessive sexual desire)		
3.	*Stṛī priyopabhoga* (Loved by women/ liking coitus with women)		
4.	*Prasanna* and *Snigdha svara* (clear and unctuous voice)		
5.	*Balawāna* (Strong both physically and mentally)		
6.	*Sukha bhak* (Happiness)		
7.	*Ārogya bhak* (Sound health)		
8.	*Vitta bhak* (Strong health)		
9.	*Aiśvary bhak* (Supermacy and prosperity)		
10.	*Sammāna bhak* (Honour)		
11.	*Apathya bhak/Bahu prajā* (Good progeny)		
12.	*Bahu śukra* (Good volume of semen)		
13.	*Guru śukra* (Thick semen)		
14.	*Vidhvāna* (Intelligent)		
15.	Doesn't suffer from *Śukraduṣṭi Vikārās*		

सत्व सार पेुरुप (Satva Sāra Puruṣa)

स्मृतिमन्तो भक्तिमन्तः कृतज्ञाः प्राज्ञाः शुचयो महोत्साहा दक्षा धीराः समरविक्रान्तयोधिनस्त्यक्तविषादाः सुव्यवस्थितगति-गम्भीरबुद्धिचेष्टाः कल्याणाभिनिवेशिनश्च सत्त्वसाराः। तेषां स्वलक्षणैरेव गुणा व्याख्याताः ॥ *C.Vi. 8/110*

स्मृतिभक्तिप्रज्ञाशौर्य्यशौचोपेतं कल्याणाभिनिवेशं सत्त्वसारं विद्यात् । *S.Su. 35/16*

Physio-psychological Characteristics

1. Individuals endowed with good memory, devotion, intelligence, cleanliness, valour, bravery, benevolent thoughts, actions, gratefulness, wisdom, purity, excessive enthusiasm, skill, courage, valour in fighting, absence of sorrow, walks in proper gait, depth

of wisdom and sincerity in actions and virtuous acts.

4. संहनन परीक्षा (Saṁhanana Parīkṣā)

(Examination of compactness of body organs)

संहननतश्चेति संहननं, संहतिः, संयोजनमित्येकोऽर्थः। तत्र समसुवि-भक्तास्थि, सुबद्धसन्धि, सुनिविष्टमांसशोणितं, सुसंहतं शरीरमित्युच्यते। तत्र सुसंहतशरीराः पुरुषा बलवन्तः, विपर्ययेणाल्पबलाः, मध्यत्वात् संहननस्य मध्यबला भवन्ति ॥

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Patient must be examined with reference to his *saṁhanana* or compactness of the body. *Saṁhanana, saṁhati* and *saṁyojana*–are synonymous. A person having compact body and he reflects the quality of the overall body build. Clinically patient may be assessed as *pravara* (superior), *madhyama* (moderate) and *avara* (inferior) *saṁhanana* depending on the compactness of body organs.

A. Pravara Saṁhanana

1. Symmetrical and well demarcated bones
2. Well knit joints
3. Well bound muscles and blood
4. Strong built
5. Excellent strength

B. Madhyama Saṁhanana

1. Moderately symmetrical and moderately demarcated bones
2. Moderately knit joints
3. Moderately bound muscles and blood
4. Moderate built
5. Moderate strength

C. Avara Saṁhanana

1. Weakly demarcated bones
2. Weakly knit joints
3. Weakly bound muscles and blood
4. Weak built
5. Weak strength

5. प्रमाण परीक्षा (Pramāṇa Parīkṣā)

(Examination of measurements of bodily organs)

प्रमाणतश्चेति शरीरप्रमाणं पुनर्यथास्वेनाङ्गुलिप्रमाणेनोपदेक्ष्यते उत्सेधविस्तारायामैर्यथाक्रमम्। तत्र पादौ चत्वारि षट् चतुर्दशाङ्गुलानि, जङ्घे त्वष्टादशाङ्गुले षोडशाङ्गुलपरिक्षेपे च, जानुनी चतुरङ्गुले षोडशाङ्गुलपरिक्षेपे, त्रिंशदङ्गुलपरिक्षेपावष्टादशाङ्गुलावूरु, षडङ्गुलदीर्घौ वृषणावष्टाङ्गुलपरिणाहौ, शेफः षडङ्गुलदीर्घं पञ्चाङ्गुलपरिणाहं, द्वादशाङ्गुलिपरिणाहो भगः, षोडशाङ्गुलविस्तारा कटी, दशाङ्गुलं बस्तिशिरः, दशाङ्गुलविस्तारं द्वादशाङ्गुलमुदरं, दशाङ्गुलविस्तीर्णे द्वादशाङ्गुलायामे पार्श्वे, द्वादशाङ्गुलं स्तनान्तरं, द्व्याङ्गुलं स्तनपर्यन्तं, चतुर्विंशंत्यङ्गुलविशालं द्वादशाङ्गुलोत्सेधमुरः, द्व्याङ्गुलं हृदयम्, अष्टाङ्गुलौ स्कन्धौ, षडङ्गुलावंसौ, षोडशाङ्गुलौ प्रबाहू, पञ्चदशाङ्गुलौ प्रपाणी, हस्तौ द्वादशाङ्गुलौ, कक्षावष्टाङ्गुलौ, त्रिकं द्वादशाङ्गुलोत्सेधम्, अष्टादशाङ्गुलोत्सेधं पृष्ठं, चतुरङ्गुलोत्सेधा द्वाविंशत्यङ्गुलपरिणाहा शिरोधरा, द्वादशाङ्गुलोत्सेधं चतुर्वि-शंत्यङ्गुलपरिणाहमाननं, पञ्चाङ्गुलमास्यं, चिबुकोष्ठकर्णाक्षिमध्यनासिकाललाटं चतुरङ्गुलं, षोडशाङ्गुलोत्सेधं द्वात्रिंशदङ्गुलपरिणाहं शिरः, इति पृथक्त्वेनाङ्गावयवानां मानमुक्तम्। केवलं पुनः शरीरमङ्गुलिपर्वाणि चतुरशीतिः। तदायामविस्तारसमं समुच्यते। तत्रायुर्बलमोजः सुखमैश्वर्यं वित्तमिष्टाश्चापरे भावा भवन्त्यायत्ताः प्रमाणवति शरीरे; विपर्ययस्त्वतो हीनेऽधिके वा ॥ *C.Vi 8/117*

Organs		**Height**	**Length**	**Breadth**	**Circum**	**Others ference (not specified)**
(1)		**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
1.	Feet	4	14	6	–	–
2.	*Jaṅghā* (calf region)	–	18	–	16	–
3.	Knees	–	4	-	16	–
4.	Thighs	–	18	-	30	–
5.	Testicles	–	6	-	8	–
6.	Phallus	–	6	-	5	–
7.	Vagina	–	–	–	12	–
8.	Waist	–	–	16	–	–

9.	*Bastiśiras* (top of pelvis)	–	–	–	–	10
10.	Abdomen	–	12	10	–	–
11.	*Pārśva* (side of chest)	–	12	10	–	–
12.	Distance between the nipples	–	–	–	–	12
13.	Nipples	–	–	–	2	–
14.	Chest	12	–	24	–	–
15.	*Hṛdaya* (heart)	–	–	–	–	2
16.	Shoulders	–	–	–	–	18
17.	Shoulder blades	–	–	–	–	6
18.	*Prabāhu* (arms)	–	–	–	–	16
19.	Fore-arms	–	–	–	–	15
20.	Hands	–	–	–	–	20
21.	Axillae	–	–	–	–	8
22.	*Tṛika* (sacrum including coccyx)	12	–	–	–	–
23.	Back	18	–	–	–	–
24.	Neck	4	–	–	22	–
25.	Face	12	–	–	24	–
26.	Mouth	–	–	5	–	–
27.	Chin	–	–	–	–	4
28.	Lips	–	–	–	–	4
29.	Ears	–	–	–	–	4
30.	Distance between the eyes (external angles of the eyes)	–	–	–	–	4
31.	Nose	–	–	–	–	4
32.	Fore-head	–	–	–	–	4
33.	Head	16	–	–	32	–
34.	Entire body	84	–	84	–	–

One should examine clinically the measurement of inidvidual organs of the body to understood the superiority, mediocrity and inferiority of one's own anthropometry in response to his or her age and sex. A body possessed of organs having proper measurement is indowed with longevity, strength, *ojas* (energy), happiness, power, wealth and virtues. If the measurement is either on the high or low side, the individual possesses qualities contrary to what are mentioned above.

Pramāṇa Parīkṣā According to Suśruta

अथ पुनरायुषो विज्ञानार्थमङ्गप्रत्यङ्गप्रमाणसारानुपदेक्ष्यामः । तत्राङ्गान्यन्तराधिसक्थिबाहुशिरसि तदवयवाः प्रत्यङ्गानीति । तत्र, स्वैरङ्गुलैः पादाङ्गुष्ठप्रदेशिन्यौ द्व्यङ्गुलायते । प्रदेशिन्यास्तु मध्यमाऽनामिकाकनिष्ठिका यथोत्तरं पञ्चमभागहीनाः । चतुरङ्गुलायते पञ्चाङ्गुलविस्तृते प्रपदपादतले । पञ्चचतुरङ्गुलायतविस्तृता पार्ष्णिः । चतुर्दशाङ्गुलायतः पादः । चतुर्दशाङ्गुलपरिणाहानि पादगुल्फजङ्घाजानुमध्यानि । अष्टादशाङ्गुला जङ्घा, जानूपरिष्टाच्च द्वात्रिंशदङ्गुलमेवं पञ्चाशत् । जङ्घायामसमावूरू ॥ द्व्यङ्गुलानि वृषणचिबुकदशननासापुटभागकर्णमूलनयनान्तराणि । चतुरङ्गुलानि मेहनवदनान्तरनासाकर्णललाटग्रीवोच्छ्रायदृष्ट्यन्तराणि । द्वादशाङ्गुलानि भगविस्तारमेहननाभिहृदयग्रीवास्तनान्तरमुखायाममणिबन्धप्रकोष्ठस्थौल्यानि । इन्द्रबस्तिपरिणाहांसपीठकूर्परान्तरायामः षोडशाङ्गुलः । चतुर्विंशत्यङ्गुलो हस्तः । द्वात्रिंशदङ्गुलपरिमाणौ भुजौ । द्वात्रिंशत्परिणाहावूरू । मणिबन्धकूर्परान्तरं षोडशाङ्गुलम् । तलं षट्चतुरङ्गुलायामविस्तारम् । अङ्गुष्ठमूलप्रदेशिनीश्रवणापाङ्गान्तरमध्यमाङ्गुल्यौ पञ्चाङ्गुले ।

अर्द्धपञ्चाङ्गुले प्रदेशिन्यनामिके। सार्धत्र्यङ्गुलौ कनिष्ठाङ्गुष्ठौ ॥ चतुर्विंशति विस्तारपरिणाहं मुखग्रीवं; त्रिभागाङ्गुलविस्तारा नासापुटमर्यादा नयनत्रिभाग परिणाहा तारका; नवमस्तार कांशो दृष्टिः, केशान्तमस्तकान्तरमेकादशाङ्गुलं मस्तकादव दुकेशान्तो दशाङ्गुलः कर्णायद्वन्तरं चतुर्दशाङ्गुलं पुरुषोरःप्रमाण-विस्तीर्णा स्त्रीश्रोणिः; अष्टादशाङ्गुलविस्तारमुरः; तत्प्रमाणा पुरुषस्य कटि; सविंशमङ्गुलशतं पुरुषायाम इति पञ्चविंशे ततो वर्षे पुमान् नारी तु षोडशे। समत्वागतवीर्य्यौ तौ जानीयात् कुशलो भिषक् ॥

S.Su.35/12-15

Organs	Height	Length	Breadth	Circum	Others ference (not specified)
1. Great toe and second toe	–	2	–	–	–
2. Third, fourth & little toe	–	$^1/_5$th of second toe	–	–	–
3. Anterior part of the foot	–	4	5	–	–
4. Arch of the foot	–	4	5	–	–
5. Heel	–	6	4	–	–
6. Foot	–	14	–	14	–
7. Middle portion of foot				14	
8. Ankle	–	–	–	14	–
9. Leg	–	18	–	14	–
10. Knee (Portion above knee)	–	32	–	14	–
11. Lower extremity	–	50	–	–	–
12. Thighs	–	18	–	32	–
13. Scroatum	–	2	–	–	–
14. Chin	–	2	–	–	–
15. Teeth	–	2	–	–	–
16. Anterior flaps of the nose	–	2	–	–	–
17. Root of the ear	–	2	–	–	–
18. Space between brows & inter-ior of eyes	–	2	–	–	–
19. Penis	–	4	–	–	–
20. Mouth cavity	–	4	–	–	–
21. Nose	–	4	–	–	–
22. Ear	–	4	–	–	–
23. Forehead	–	4	–	–	–
24. Neck	–	4	–	–	–
25. Intervals of pupils	–	4	–	–	–
26. Vagina	–	12	–	–	–
27. Space between penis & umbilicus	–	12	–	–	–
28. Space between Umbilicus & heart	–	– 12	–	–	–
29. Space between heart & neck	–	12	–	–	–
30. Between breasts	–	12	–	–	–

31. Face	–	12	–	–	–
32. Thickness of wrist	–	12	–	–	–
33. Foream	–	12	–	–	–
34. Centre of calf muscle and interval between shoulder & elbow	–	–	–	16	–
35. Interval between elbow & tip of the middle finger	–	24	–	–	–
36. Arms	–	32	–	–	–
37. Interval between wrist and elbow	–	16	–	–	–
38. Palm	–	6	6	–	–
39. Interval between thumb root & index finger	–	5	–	–	–
40. Between ears & eye corner	–	5	–	–	–
41. Middle finger	–	5	–	–	–
42. Index & ring finger	–	$4\frac{1}{2}$	–	–	–
43. Little finger & thumb	–	$3\frac{1}{2}$	–	–	–
44. Mouth	–	–	4	–	–
45. Neck	–	–	–	20	–
46. Nostril	–	1/3rd of finger	–	–	–
47. Area of *iris*	–	1/3rd of eye	–	–	–
48. Pupil	–	Ninth part of iris	–	–	–
49. Interval between margin of	–	11	–	–	–
50. Middle of the skull to the end of hairs in neck		10			
51. Space between two ears through back of the neck	–	14	–	–	–
52. Female pelvis	12	–	24	–	–
53. Female chest	–	–	18	–	–
54. Male waist	–	–	18	–	–

Total height of the person is one hunder & twenty fingers (120 fingers). The expert physician should take measurement of man & woman at the age of twenty five & sixteen years respectively because they attain adult hood in their respective ages.

देहः स्वैरङ्गुलैरेष यथावदनकीर्तितः ।
युक्तः प्रमाणेनानेन पुमान् वा यदि वाऽङ्गना ॥
दीर्घमायुरवाप्नोति वित्तच महदृच्छति ।
मध्यमं मध्यमैरायुर्वित्तं हीनैस्तथाऽवरम् ॥

S.Su. 35/16-17

This is determined by measuring the height, length and breadth of the organs by taking the fingerbreadth of the individual as the unit measurement. A body possessed of organs having proper measurement is endowed with longevity, strength, *ojas* (energy), happiness, power, wealth and nobility.

If the measurement is either on the high or low side the individual possesses qualities contrary to what are mentioned for proper measurement of body.

A) *Pravara Pramāṇa*

Height Length Breadth	A person who fulfills standard measurement criteria excellently

B) *Madhyama Pramāṇa*

Height Length Breadth	A person who fulfills standard measurement criteria moderately

C) *Avara Pramāṇa*

Height Length Breadth	A person who fulfills standard measurement criteria up to lesser extent

6. Sātmya *(Suitability)*

(Examination of homologation)

सात्म्यतश्चेति सात्म्यं नाम तद्यत् सातत्येनोपसेव्यमानमुपशेते। तत्र ये घृतक्षीरतैलमांसरससात्म्याः सर्वरससात्म्याश्च ते बलवन्तः क्लेशसहाश्चिरजीविनश्च भवन्ति, रूक्षसात्म्याः पुनरेकरससात्म्याश्च ये ते प्रायेणाल्पबला अल्पक्लेशसहा अल्पायुषोऽल्पसाधनाश्च भवन्ति, व्यामिश्रसातम्यास्तु ये ते मध्यबलाः सात्म्यनिमित्ततो भवन्ति ॥ *C.Vi 8/118*

It stands for such factors as are wholesome to the individual even when continuously used. Individuals for whom ghee, milk, oil and meat soup as well as the drugs and diets having all the six tastes are wholesome are endowed with strength, the power of facing difficult situations and longevity. Those who are accustomed to ununctous things and drugs and diets, having only one particular taste, are mostly possessed of less strength, less (resistance) to face difficult situations is of smaller life span and of meagre accessories like drugs for the treatment of his diseases. If there is combination of both these types of homologation, individuals are possessed with moderate strength.

If an individual accustomed to use only such drugs and diets having one and the same taste the drugs and diets possessed of the remaining tastes will be unwholesome for him.

S.No.	Aspects	Yes	No
1.	*Ghṛta* (Ghee)		
2.	*Kṣīra* (Milk)		
3.	*Taila* (Oil)		
4.	*Māṁsa rasa* (Meat soup)		
5.	*Madhura* (Sweet)		
6.	*Āmla* (Sour)		
7.	*Lavaṇa* (Sour)		
8.	*Kaṭu* (Pungent)		
9.	*Tikta* (Bitter)		
10.	*Kaṣāya* (Astringent)		
11.	*Usṇa* (Hot)		
12.	*Śīta* (Cold)		
13.	*Śuṣka* (Dry)		
14.	*Drava* (Moisture)		
15.	*Snigdha* (Smooth)		
16.	*Rūkṣa* (Rough)		
17.	Others		

Out of 17 points, if person fulfills
> 13 Criteria approximately = *Pravara Sātmya*
> 07 Criteria approximately = *Madhyama Sātmya*
> 03 Criteria approximately = *Avara Sātmya*

7. सत्व परीक्षा (Satva Parīkṣā)

(Examination of mental faculties)

सत्त्वतश्चेति सत्त्वमुच्यते मनः। तच्छरीरस्य तन्त्रकमात्मसंयोगात्। तत्रिविधं बलभेदेन–प्रवरं, मध्यम्, अवरं चेति; अतश्च प्रवरमध्यावरसत्त्वाः पुरुषा भवन्ति। तत्र प्रवरसत्त्वाः सत्त्वसारास्ते सारेषूपदिष्टाः, स्वल्पशरीरा ह्यपि ते निजागन्तुनिमित्तासु महतीष्वपि पीडास्वव्यथा दृश्यन्ते सत्त्वगुणवैशेष्यात्; मध्यसत्त्वास्त्वपरानात्मन्युपनिधाय संस्तम्भयन्त्यात्मनाऽऽत्मानं परैर्वाऽपि संस्तभ्यन्ते; हीनसत्त्वास्तु नात्मना नापि परैः सत्त्वबलं प्रति शक्यन्ते उपस्तम्भयितुं, महाशरीरा ह्यापि ते स्वल्पानामपि वेदनानामसहा दृश्यन्ते, सन्निहितभयशोकलोभमोहमाना रौद्रभैरवद्विष्टबीभत्सविकृतसंकथास्वपि च पशुपुरुषमांसशोणितानि चावेक्ष्य विषादवैवर्ण्यमूर्च्छोन्मादभ्रमप्रपतनानामन्यतममाप्नुवन्त्यथवा मरणमिति ॥ *C.Vi 8/119*

Satva is mind and it regulates the body because of its association with soul. It is of three types, viz., *pravara* (superior), *madhyama* (moderate) and *avara satva* (inferior) depending on their mental faculties.

प्रवर सत्व (Pravara Satva)

Individuals having mental faculties of superior type are possessed of the excellence of these faculties.

1. Excellent mental faculties (*dhī, dhṛti* and *smṛti*)
2. Able to bear the stronger therapies without producing any harmful effect to the body.
3. Weak physique persons having excellent mental faculties tolerate serious exogenous and endogenous diseases without many difficulties
4. Tolerates and adjusts to pain or odd situations well.
5. Persons adopts same sort of feeling/mental status towards happiness and sorrow.
6. Remaining under control by himself.
7. Predominant of *satvaguṇa.*

मध्यम सत्व (Madhyama Satva)

1. Moderate mental faculties (*dhī, dhṛti* and *smṛti*)
2. Able to bear the stronger therapies with producing harmful effect to the body.
3. Predominant *rajo guṇa* tolerates when controlled by others.
4. Weak physique person having moderate mental faculties tolerates serious exogenous and endogenous diseases with much difficulty.
5. Tolerates and adjusts to pain or odd situations moderately.

अवर सत्व (Avara Satva)

1. Inferior type of mental faculties.
2. Neither by themselves nor through others can sustain their mental strength.
3. Inspite of having sound physique, they cannot susceptible to fear, grief, greed, delusion and ego.
4. When they hear even stories describing wrathful, fearful, hateful, terrifying and ugly situation or come across visions of flesh or blood of an animal or man, they fall victims to depression, pallor, fainting, madness, giddiness of falling on the ground, or such events may even lead them to death.
5. These types of persons are contraindicated to *saṁśodhana karma.*
6. Tolerates and adjusts to pain or odd situations very badly.
7. Predominant *tamoguṇa* individuals cannot tolerate at all.

8. आहार शक्ति परीक्षा (Āhāra Śakti Parīkṣā)

(Examination of power of assimilation)

आहारशक्तितश्चेति आहारशक्तिरभ्यवहरणशक्त्या जरणशक्त्या च परीक्ष्या; बलायुषी ह्याहारायत्ते ॥ *C.Vi 8/120*

One's capacity for food can be examined from two angles viz. *abhyavaharaṇa śakti* (the power of ingestion) and *jāraṇa śakti* (the power of digestion). Strength and life span of the individual are determined by the one's own diet capacity. It all depends on the condition of the *agni* residing in the body. That's why *ācāryās* defined the role of *agni* in the manifestation or aggravation of the disease. If individual posses a good digestive power then he will be able to sustain the stronger therapies as a consequence he will recover quickly from the afflictions. Protection of *agni* by any means is necessary to maintain excellent digestion and power of ingestion, this leads to stronger immunity to resist against dreadful diseases. This may be classified into three subtypes for the purpose of clinical assessment.

प्रवर आहार शक्ति *(Pravara Āhāra Śakti)*–Excellent Power of Digestion

Persons having excellent power of ingestion and digestion of food are claimed to be healthy persons. These kinds of persons are endowed with excellent strength, longevity, joy, good physique, superior mental faculties, full of essence of *dhātus,* power of resisting any sort of difficulties etc. Digestion of food when taken in large quantity is indicative of excellent *āhāra śakti.*

मध्यम आहार शक्ति *(Madhyama Āhāra Śakti)*–Moderate digestive power

Individuals having moderate strength of ingestion and digestion of food are claimed to be moderately healthy. Unable to digest properly when person consumes large amount of food. Moderate medicaments may be prescribed for the effective management. These persons possess moderate strength longevity and immunity.

अवर आहार शक्ति *(Avara Āhāra Śakti)*–Weak digestive power

Person is unable to digest even small quantities of food. These persons suffers from diseases very oftenly and endowed with less strength, longevity, immunity and unable to sustain the stronger medicaments. Mild medicaments are required for the effective management and medicines should be administered for longer duration to recover from diseases.

9. व्यायाम शक्ति परीक्षा (Vyāyāma Śakti Parīkṣā)

(Examination for power of exercise)

व्यायामशक्तितश्चेति व्यायामशक्तिरपि कर्मशकत्या परीक्ष्या। कर्मशत्त्या ह्यनुमीयते बलत्रैविध्यम् ॥ *C.Vi 8/121*

The patient should be examined with reference to his capacity for exercise; which determines one's own ability to perform work. Strength of individuals is classified into three categories depending upon their ability to perform work namely–

Pravara vyāyāma śakti - Excellent power of exercise

Madhyama vyāyāma śakti - Moderate power of exercise

Avara vyāyāma śakti - Mild power of exercise

प्रवर व्यायाम शक्ति (Pravara Vyāyāma Śakti)

Individual possess excellent exercise endurance. To advice rehabilitation programme, person should have a good power of exercise. These persons are able to do a physiotherapy technique without much difficulty, this helps for faster recovery. These kinds of individuals are able to perform heavy exercises.

Madhyama Vyāyāma Śakti

These individuals possess a moderate power of exercise. Persons follow the physiotherapeutic technique moderately as a result it hampers the quicker relief. Moderate medicaments must be prescribed to gain desirable results.

Avara Vyāyāma Śakti

Individuals possess a mild power of'exercise. These people are unable to follow the physiotherapeutic technique even upto slighter extent. This hastens the slower recovery. Mild medicaments are suitable to gain good results.

10. वय परीक्षा (Vaya Parīkṣā)

(Examination in respect of Age)

वयस्तश्चेति कालप्रमाणविशेषापेक्षिणी हि शरीरावस्था वयोऽभिधीयते। तद्वयो यथास्थूलभेदेन त्रिविधं–बालं, मध्यं, जीर्णमिति। तत्र बालमपरिपक्वधातुमजातव्यञ्जनं सुकुमारमक्लेश-सहमसंपूर्णबलं श्लेष्म-धातुप्रायमाषोडशवर्षं, विवर्धमानधातुगुणं पुनः प्रायेणानवस्थितसत्त्वमात्रिंशद्वर्षमुपदिष्टं; मध्यं पुनः समत्वागतबलवीर्यपौरुषपराक्रमग्रहणधारणस्मरणवचनविज्ञान-सर्वधातुगुणं बलस्थितमवस्थितसत्त्वमविशीर्यमाणधातुगुणं पित्तधातुप्रायमाषष्टिवर्षमुपदिष्टम्; अतः परं हीयमानधात्विन्द्रियबल-वीर्यपौरुषपराक्रमग्रहणधारणस्मरणवचनविज्ञानं भ्रश्यमानधातुगुणं वायुधातुप्रायं क्रमेण जीर्णमुच्यते आवर्षशतम्। वर्षशतं खल्वायुषः प्रमाणमस्मिन् काले; सन्ति च पुनरधिकोनवर्षशतजीविनोऽपि मनुष्याः; तेषां विकृतिवर्ज्यैः प्रकृत्यादिबलविशेषैरायुषो लक्षणतश्च प्रमाणमुपलभ्य वयसस्त्रित्वं विभजेत् ॥ *C.Vi. 8/122*

Vaya (age) is defined as the state of body corresponding to the length of time that has passed since birth. Age is broadly divided into three stages–*bāla* (childhood), *madhya* (middle age) and *jīrṇa* (old age). Childhood is determined upto sixteen years, when the *dhātus* are immature, sexual characters are not manifested, the body is delicate, unenduring, with incomplete strength and predominant in *kapha*. In this stage *dhātus* are in developing stage and unstable mind remains upto thirty years. Mild medicaments may be employed. This middle age is characterized by strength, energy, virility, prowess, acquisition, retention, recollection, speech, understanding and qualities of all *dhātus* having reached the normal limit; with proper physical and mental strength, without degeneration in qualities of *dhātus*, with predominance of *pitta dhātu* and is upto 60 years. Stronger medicaments may be employed to gain the success.

Old age is upto one hundred years. There is diminution of *dhātus* (tissue elements), strength of sense organs, energy, manliness, valor, power of understanding, retention, memorizing, speech and analyzing fact. There is gradual diminution in the qualities of *dhātus* and dominance of *vāta*. There are persons who live longer or shorter than that, in such cases, one should determine the three divisions of age on the basis of strength of the factors like *prakṛti, sāra* etc. except *vikṛti* and also characters of different periods of life span. This period should be handled carefully with mild and moderate medicaments because of delicate nature of the old age.

Life span of individuals viz. long, medium and short can be determined by superiority, mediocrity and inferiority of *prakṛti, sāra* etc. except *vikṛti*. For example if a person possess a *pravara* qualities of *prakṛti, sāra* etc. except *vikṛti* then individual lives longer, *madhyama* qualities leads to medium life span and *avara* qualities leads to short life span. So, depending upon the long, medium and short life span, age may be divided into *bāla, madhya, jīrṇa*, for example short life span may be determined upto 70 years in which young age may be determined upto 16 years, middle age from 16 to 50 years and old age thereafter.

Factors Modifying Drug Action

Variation in response to the same dose of a drug between different patients and even in the same patient on different occasions is a rule rather than exception. A multitude of host and environmental factors influence drug response. Though, individual variation cannot be totally accounted for by these factors, their understanding can guide choice of appropriate drug and dose for an individual patient. This concept was clearly defined while describing *daśavidha parīkṣā* to understand and to implement a suitable therapeutics in a suitable dose.

Various qualitative and quantitative factors modify drug actions.

A. Quantitatively–The plasma concentration and/ or the action of the drug is increased or decreased. This view was clearly defined when describing the state of *āhāra śakti, pramāṇa* and *saṁhanana*.

B. Qualitatively–The type of response is altered e.g. drug allergy on idiosyncrasy. The various factors are discussed below–

1. Body size : It influences the concentration of the drug attained at the site of action. For exceptionally obese or lean individuals and for children dose may be calculated on body weight (BW) basis;

$$\text{Individual dose} = \frac{\text{BW(Kg)}}{70}\,\partial\text{average adult dose}$$

Āyurvedic ācāryas defined the *saṁhanana* and *pramāṇa* to implement strong, moderate and mild dose of the medicine depending on their *pravara, madhyama* and *avara* characteristics properties respectively.

2. Age : The dose of a drug for children often calculated from the adult dose.

Child dose =

$$\frac{\text{Age}}{\text{Age}+12}\,\partial\text{adult dose (Young's formula)}$$

Solid dosage forms and aerosol inhalations are difficult to administer to young children. Children are growing and are susceptible to special adverse effects. This view was described clearly that's why mild therapeutics was described in *Āyurveda* for the management of child health problems. That's why mercurial preparations, purificatory procedures etc. are strictly contraindicated in children to prevent adverse effects.

Elderly–in the elderly, renal function progressively declines (intact nephron loss) and drug dose have to be reduced. This principle is clearly described in *Āyurveda* i.e. elderly patients must be handled delicately and mild therapeutics should be employed to lessen the adverse effects and to gain good results. Keeping this in mind purificatory measures are contraindicated in elderly patients to avoid the incidence of adverse drug reactions and mild to moderate medicaments advised.

3. Sex : Females have smaller body size and

require doses that are on the lower side of the range. Subjective effects of drugs may differ in females because of their mental make up. In women consideration must also be given to menstruation, pregnancy and lactation. There are marked physiological changes during pregnancy, especially in third trimester, which can alter drug disposition.

This concept was accepted in *Āyurvedic* literature i.e. female are having moderate compactness, measurements, essence of *dhātus,* power of digestion and exercise etc. That's why moderate therapeutic must be employed to lessen the incidence of adverse drug reactions. During pregnancy mild therapeutic approach was described and stronger therapies like alkali, cauterization, purificatory procedures are contraindicated.

4. Species and race : There are many examples of differences in responsiveness to drugs among different species.

Different species having *prakṛti* of different type, this leads to the responsiveness of the medicine.

5. Genetics : The dose of the drug to produce the same effect may vary 4-6 folds among different individuals. This is mainly because of differing rates of drug metabolism as the amount of microzomal enzymes in genetically controlled. There are also differences in target organ sensitivity.

This concept was defined under *prakṛti* and *sāra parīkṣā.* This is varies in different constitution and essence of *dhātus* because drug metabolism varies among different subclassi-fication of *prakṛti* and *sāra.*

6. Environmental factors and time of administration : Several environmental factors affect drug responses; exposure to insecticides, carcinogens, tobacco, smoke, and consumption of charcoal boiled meat are well known to induce drug metabolism. Type of diet and meals can alter drug absorption. Subjective effect of a drug may be markedly affected by the setup in which it is taken.

This view was clearly defined under *kāla* and *deśa parīkṣā. pathya* regimen, time period for the ingestion of medicine was described in detail in *Āyurvedic* texts, that's why different time period for the consumption of medicine described to enhance the efficacy of the prescribed compound.

7. Psychological Factor : Efficacy of a drug can be affected by patient's beliefs, attitudes and expectations.

This view was clearly stated by our *ācāryas* under *satva parīkṣā* and *satva sāra parīkṣā* in detail.

8. Pathological states : Not only drugs modify disease processes, several diseases can influence drug disposition and drug action.

This concept was clearly defining under vikṛti parīkṣā

9. Tolerance : It means requirement of higher dose of a drug to produce a given response. It is a widely occuring adaptive biological phenomenon. It may be natural or acquired. This concept was described under *sātmya parīkṣā.*

एवं प्रकृत्यादीनां विकृतिवर्ज्यानां भावानां प्रवरमध्यावरविभागेन बलविशेषं विभजेत्। विकृतिबलत्रैविध्येन तु दोषबलं त्रिविधमनुमीयते। ततो भैषज्यस्य तीक्ष्णमृदुमध्यविभागेन त्रैविध्यं विभज्य यथादोषं भैषज्यमवचारयेदिति ॥ *C.Vi. 8/123*

Strengh of the individuals can be classified into superiority, mediocrity and inferiority based on *prakṛtyādi* nine factors except *vikṛti.* Three types of the strength of the *doṣās* are inferred from the three types of the severity of morbidity. Based on this three types of medicaments may be planned i.e. strong, mild and moderate therapy should be administered.

सुश्रुतोक्त द्वादश परीक्षा (Suśrutokta Dvādaśa Parīkṣā)

आतुरमुपक्रममाणेन भिषजाऽऽयुरादावेव परीक्षितव्यं; सत्यायुषि व्याध्यृत्वग्नि-वयो देहबलसत्व सात्म्यप्रकृति भेषज देशान् परीक्षेत्।
S. Su 35/3

Before prescribing any therapeutic procedures, physician should examine his *Āyus* (life span); if he has long span then his *vyādhi* (disease), *ṛtu* (season), *agni* (digestive power), *vayaḥ* (age), *deha* (body build), *bala* (strength), *satva* (mind), *sātmya* (conducive factors), *prakṛti* (constitution), *bheṣaja* (drug) and *deśa* (habitat).

1. आयु परीक्षा (Examination of Life Span)

दीर्घायु (Dīrghāyu)

तत्र महापाणिपादपार्श्वपृष्ठस्तनाग्रदशनवदनस्कन्धललाटं दीर्घाङ्गुलिपर्वोच्छ्वासप्रेक्षणबाहुं, विस्तीर्णभ्रूस्तनान्तरोरस्कं, ह्रस्वजङ्घामेढ्ग्रीवं, गम्भीरसत्त्व-स्वरनाभिम्, अनुच्चैर्बद्धस्तनम्, उपचितमहारोमशकर्णं, पश्चान्मस्तिष्कं, स्नातानुलिप्तं मूर्धानुपूर्व्या विशुष्यमाणशरीरं पश्चाच्च विशुष्यमाणहृदयं पुरुषं जानीयाद्दीर्घायुः स्वल्वयमिति। तमेकान्तेनोपक्रमेत्। एभिर्लक्षणैर्विपरीतैरल्पायुः; मिश्रैर्मध्यमायु-रिति। *S. Su 35/4*

- One who possesses big hands, feet, flanks, back, tip of the breasts, teeth, face, shoulders and forehead.
- One who possesses long finger joints, expirations, eyes, arms.
- One who have broad brows and space in between the breasts and chest are broad.
- One who possesses short calves, penis and neck.
- Whose mind, voice and umbilicus are deep.
- Whose breasts are not greatly elevated but are firm.
- Whose ears and back of the head are well grown big and hairy.
- Whose body drying first from the head after bath and anointing and the region of the heart later on.

One who possesses all the above qualities should be understood as *dīrghāyu* (having long span of life) should be treated with all efforts, on the contrary one who possesses opposite to the above qualities should be understood as *alpāyu* (short span of life). One who possesses mixed features are considered as *madhyamāyu.*

मध्यमायु (Madhyamāyu–Moderate Life Span)

मध्यमस्यायुषो ज्ञानमत ऊर्ध्वं निबोध मे।
अधस्तादक्षयोर्यस्य लेखाः स्युर्व्यक्तमायताः॥
द्वे वा तिस्रोऽधिका वाऽपि पादौ कर्णौ च मांसलौ।
नासाग्रमूर्ध्वं च भवेदूर्ध्वं लेखाश्च पृष्ठतः॥
यस्य स्युस्तस्य परममायुर्भवति सप्ततिः॥
S. Su. 35/7-8

- One who possesses well manifest, broad, two, three or more lines below the *akṣa* (clavicles).
- Whose feet and ears are more mascular.
- Whose tip of the nose is elevated.
- Appearance of vertical lines on the back.
- Person will survive for 70 years.

अल्पायु (Alpāyu–Short Life Span)

जघन्यस्यायुषो ज्ञानमत ऊर्ध्वं निबोध मे।
ह्रस्वानि यस्य पर्वाणि सुमहच्चापि मेहनम॥
तथोरस्यवलीढानि न च स्यात्पृष्ठमायतम्।
ऊर्ध्वं च श्रवणौ स्थानान्नासा चोच्चा शरीरिणः॥
हसतो जल्पतो वाऽपि दन्तमांसं प्रदृश्यते।
प्रेक्षते यश्च विभ्रान्तं स जीवेत्पञ्चविंशतिम्॥
S. Su. 35/9-11

- One who possesses short joints, big penis, chest having hairs appearing in circles (whirls).
- Whose back is not broad .
- Ears and nose located slightly up than their normal position.
- Whose gums are visible during laughing or talking.
- Whose sight is unsteady will survive only for 25 years only.

Śarīra pramāṇa (measurements of the body) and sāra (excellence of mind and tissues) are described in detail under *daśavidha parīkṣā* chapter.

2. व्याधि परीक्षा (Vyādhi Parīkṣā- Examination of diseases) S.Su. 35/20-23

It has been discused in detail under *Vyādhi* and *Upadrava* Chapter.

3. ऋतु परीक्षा (Ṛtu Parīkṣā- examination of seasons)

शीते शीतप्रतीकारमुष्णे चोष्णनिवारणम्।
कृत्वा कुर्यात् क्रियां प्राप्तां क्रियाकालं न हापयेत्॥
अप्राप्ते वा क्रियाकाले प्राप्ते वा न कृता क्रिया।
क्रिया हीनाऽतिरिक्ता वा साध्येष्वपि न सिध्यति॥
या ह्युदीर्णं शमयति नान्यं व्याधिं करोति च।
सा क्रिया, न तु या व्याधिं हरत्यन्यमुदीरयेत्॥
S.Su. 35/25-27

Detail description of seasons narrated under *ṛtu carya adhyāya* i.e. S.Su. 6th chapter. Hot therapies are required to combat the effect of cold season and vice versa. Medicaments should be prescribed in a right time.

Treatment done earlier to the proper time or treatment not done at the proper time and treatment being either inadequate or in excess, these do not succeed even in curable diseases.

Therapy is called ideal which cures the aggravated disease and doesn't manifest another disease. Therapy is called unideal which cures the disease but gives rise to another disease.

4. अग्नि परीक्षा (Agni Parīkṣā- Examination of digestive fire)

It has been discused in detail under *Agni Chapter.*

5. वय परीक्षा (Vāya Parīkṣā–Examination of Age)

वयस्तु त्रिविधं-बाल्यं, मध्यं, वृद्धमिति। तत्रोनषोडशवर्षीया बालाः। ते त्रिविधाः-क्षीरपाः, क्षीरान्नादा, अन्नादा इति। तेषु संवत्सरपराः क्षीरपाः, द्विसंवत्सर-पराः क्षीरान्नादाः, परतोऽन्नादा इति। षोडशसप्तत्योरन्तरे मध्यं वयः। तस्य विकल्पो-वृद्धिः, यौवनं, संपूर्णता, हानिरिति। तत्र, आविंशतेर्वृद्धिः, आत्रिंशतो यौवनम्, आचत्वारिंशतः सर्वधात्विन्द्रियबलवीर्यसंपूर्णता, अत ऊर्ध्वमीषत्परिहानिर्यावत् सप्ततिरिति। सप्ततेरूर्ध्वं क्षीयमाणधात्विन्द्रियबलवीर्योत्साहमहन्यहनि वलीपलितखालित्यजुष्टं कासश्वासप्रभृतिभिरुपद्रवैरभिभूयमानं सर्वक्रियास्वसमर्थं जीर्णागारमिवाभिवृष्टमवसीदन्तं वृद्धमाचक्षते।

तत्रोत्तरोत्तरासु वयोऽवस्थासूत्तरोत्तरा भेषजमात्राविशेषा भवन्ति, ऋते च परिहाणेः; तत्राद्यापेक्षया प्रतिकुर्वीत।

S. Su 35/35-37

According to *Suśruta vaya* is classified into 3 stages namely *bālya, madhya* and *vṛddha.*

I. *Bālya* (Childhood or early young age)–Upto 16 years

It can be subdivided into 3

i) ***Kṣīrapa***–Only milk consumption–upto one year.

ii) ***Kṣīrānnāda***–Milk and solid food–upto two years.

iii) *Annāda*–Only solid food–more than 2 years upto 16 years.

II. *Madhya* (Middle age or young age)

More than 16 years upto 70 years of age sub dividided into

i) *Vṛddhi*– Upto 20 years (Growth phase)

ii) ***Yauvana***– Upto 30 years (Youth and adolescence)

iii) ***Sampūrṇatā***– Upto 40 years (Mature stage)

iv) ***Parihāni***–More than 40 upto 70 years (Degenerative phase)

With full growth of tissues, sense faculties, strength and vitality.

III. *Vṛddha* (Old age)

After 70 years degeneration of tissues started along with diminution in the tissues, sense faculties, strength, vitality, enthusiasm day after day, development of wrinkles on skin, grey hairs, baldness, suffers from cough, dyspnoea etc. and inability to perform all activities.

बाले विवर्धते श्लेष्मा मध्यमे पित्तमेव तु।
भूयिष्ठं वर्धते वायुर्वृद्धे तद्वीक्ष्य योजयेत्॥
अग्निक्षारविरेकैस्तु बालवृद्धौ विवर्जयेत्।
तत्साध्येषु विकारेषु मृद्वीं कुर्यात् क्रियां शनैः॥

S. Su. 35/31-32

Śleṣma enhances greatly in young age, *pitta* increases greatly in middle age and *vāta* increases greatly in old age. This should be kept in mind before planning any therapy. Use of *kṣāra* (alkali preparations) and purgation therapies should be avoided during young age and old age in diseases curable by these treatments. If it is necessary then it should be done mildly and slowly.

6. देह परीक्षा (Deha Parīkṣā–Examination of Body Physique)

देहः स्थूलः कृशो, मध्य, इति......।

S. Su. 35/40

कर्शयेद् बृंहयेच्चापि सदा स्थूलकृशौ नरौ।
रक्षणं चैव मध्यस्य कुर्वीत सततं भिषक्॥

S. Su. 35/41

Body is of three kinds i.e. *sthūla* (obese), *kṛśa* (emaciated) and *madhya* (moderate). Obese persons should be managed by thinning therapies and emaciated persons should be managed by stoutening therapies. Moderate built individuals should protect their body as such.

7. बल परीक्षा (Bala Parīkṣā)

बलमभिहितगुणं; दौर्बल्यं तु स्वभावदोषजरादिभिरवेक्षितव्यम् । यस्माद्बलवतः सर्वक्रियाप्रवृत्ति-स्तस्माद्बलमेव प्रधानमधिकरणानाम् । केचित् कृशाः प्राणवन्तः स्थूलाश्चाल्पबला नराः । तस्मात् स्थिरत्वं व्यायामैर्बलं वैद्यः प्रतर्कयेत् ॥

S. Su. 35/42-43

Assessment of strength may be done by observing the nature of *doṣās,* age group etc. because therapy differs from person to person depending upon strength of *doṣa,* age etc. Only the powerful person can sustain all kinds of treatment procedures. That's why among all factors strength of individual accounts very much before planning treatment.

By look some people may be emaciated but are very strong, while some people look stout but possess little strength. That's why proper understanding of stamina and strength should be inferred through physical exercises.

8. सत्व परीक्षा (Satva Parīkṣā- examination of mental power)

सत्त्वं तु व्यसनाभ्युदयऽऽक्रियादिस्थानेष्वविक्लवकरम् ॥
सत्त्ववान् सहते सर्वं संस्तभ्यात्मानमात्मना ॥
राजसः स्तभ्यमानोऽन्यैः सहते नैव तामसः ॥

S.Su. 35/44-45

1. *Satva* is the capacity of the mind which does not cause frustration (agony, misery) at times of sorrow.
2. *Satvavāna* person reacts composedly towards joy.
3. The person who has *satva guṇa* predominantly tolerates every thing i:e grief, happiness etc.
4. He who has *rajo guṇa* predominantly tolerates when controlled by others.
5. He who has *tamoguṇa* predominantly cannot tolerate at all.

9. सात्म्य परीक्षा (Sātmya Parīkṣā–Examination of Habituate)

सात्म्यानि तु देशकालजात्यृतुरोगव्यायामोदकदिवास्वप्न रस प्रभृतीनि प्रकृति विरुद्धान्यपि यान्यबाधकराणि भवन्ति ।

यो रसः कल्पते यस्य सुखायैव निषेवितः ।
व्यायामजातमन्यद्वा तत् सात्म्यमिति निर्दिशेत् ॥

S. Su. 35/46-47

Sātmya means things which does not causes harm to the body even though they are opposite from ones own constitution, habitat, time, caste, season, disease, exercise, water, day sleep, tastes and such others.

The usage of such tastes which when consumed makes for happiness only, apart from that produced by exercise and such others should be considered as *sātmya.*

10. प्रकृति परीक्षा (Prakṛti Parīkṣā- Examination of constitutions)

It has been discused in detail under *Daśavidha Parīkṣā Chapter.*

11. भेषज परीक्षा (Bheṣaja Parīkṣā-Examination of bheṣaja)

Detail description about *bheṣaja parīkṣa* outlined in 46th chapter of *Suśruta Sutrasthāna.*

12. देश परीक्षा (Deśa Parīkṣā–Examination of Land Regions)

देशस्त्वानूपो जाङ्गलः साधारण इति । तत्र, बहूदकनिम्नोन्नतनदीवर्षगहनो मृदुशीतानिलो बहुमहापर्वतवृक्षो मृदुसुकुमारोपचितशरीरमनुष्यप्रायः कफवातरोगभूयिष्ठश्चानूपः; आकाशसमः प्रविलाल्पकण्टकिवृक्षप्रायोऽल्पवर्षप्रस्त्रवणोदपानोदकप्राय उष्णदारुणवातः प्रविरलाल्पशैलः स्थिरकृशशरीर मनुष्य प्रायो वातपित्तरोगभूयिष्ठश्च जाङ्गलः; उभयदेशलक्षणः साधारण इति ।

S. Su. 35/42

Deśa is classified as *ānupa, jāṅgala* and *sādhāraṇa deśa.*

आनूप देश (Ānūpa Deśa–Marshy Land)

Land which is full of water, possessing ups and downs on the ground, more rivers flowing in the area, excess rainfall, soft, cold wind, full of high mountains and trees.

Persons possesses soft and tender body, well built and suffers from *kapha* and *vāta vikāra.*

जाङ्गल देश (Jāṅgala Deśa-Desert Land)

The land which is dry similar to the sky. Possesses few, small trees on the land, thorny with minimum rainfall, having less streams and reservoirs of water, wind is hot and strong, with few–small hills apart from one another.

Persons body is stable and emaciated and suffers from *vāta* and *pittaja vikāra.*

साधारण देश (Sādhāraṇa Deśa–Moderate Land)

Mixed features of the above two lands is called *sādhāraṇa deśa.*

समाः साधारणे यस्माच्छीतवर्षोष्ममारुताः ।
दोषाणां समता जन्तोस्तस्मात्साधारणो मतः॥

S. Su. 35/45

This land enjoys cold, rain, heat and wind in a moderate manner, this makes the *vāta, pitta* and *kapha doṣās* in their normalcy it is called *sādhāraṇa deśa.*

न तथा बलवन्तः स्युर्जलजा वा स्थलाहृताः ।
स्वदेशे निचिता दोषा अन्यस्मिन् कोपमागताः ॥
उचिते वर्तमानस्य नास्ति देशकृतं भयम् ।
आहारस्वप्नचेऽऽदौ तद्देशस्य गुणे सति ॥

S. Su. 35/44-45

Diseases of *ānupa deśa* are not strong if brought to *jāṅgala deśa* and vice versa. In the same way *doṣās* aggravated in their normal seats are not powerful but become stronger if aggravated in another sites. One should not worry about fear of diseases due to land causes provided if he follows whole somefood, sleep, activities etc. which are similar in qualities with the qualities of that land region.

क्रियायास्तु गुणालाभे क्रियामन्यां प्रयोजयेत् ।
पूर्वस्यां शान्तवेगायां न क्रियासंङ्करो हितः ॥

S.Su. 35/55

If treatment fails to give desired results then another treatment should be administered but only after the bouts (effects) of the earlier treatment has subsided; combining two or more treatments at a sametime is not beneficial.

गुणालाभेऽपि सपदि यदि सैव क्रिया हिता ।
कर्तव्यैव तदा व्याधिः कृच्छ्रसाध्यतमो यदि ॥

S.Su. 35/56

In case of chronic disorders or difficult disorders treatment may be continued for longer duration provided if it is comfortable to the patient.

य एवमेनं विधिमेकरूपं बिभर्ति कालादिवशेन धीमान् ।
स मृत्युपाशाञ्जगतो गदौघाञ्छिनत्ति भैषज्यपरश्वधेन ॥

S.Su. 35/57

The skilled physican who prescribed therapies by considering above points, will be able to save the diseased individual by the help of time etc. by cutting the noose of the death with the axe of medicines.

Anumāna Parīkṣā

Rogī Bala Parīkṣā can also be done through *Anumān Parīkṣā :*

1. *Agnim Jāraṇaśaktyā Parīkṣeta - Agni* (digestive fire)should be examined by the power of digestion
2. *Balam Vyāyāma Śaktyā* - Strength from the power for exercise
3. *Sañjñam Nāmagrahaṇena* - Recognition from the recollection of the name
4. *Smṛtim Smaraṇena* - Memory from the recollection of the name

CHAPTER

22

Dhatu Paka

धातु पाक (Dhātu pāka)

धातुपाकाद्धन्ति, मलपाकाद्विमुञ्चतीति व्यवस्थितविकल्पः, धातुमल पाक-विकल्पे च दैव मेव हेतुः। उत्तरोत्तरोग-वृद्धिबलहानिभ्यां शुक्रादिधातुसहितमूत्रादिना च धातु पाको ज्ञेयः, अन्यथा तु मलपाकः; यदुक्तं निद्रानाशो हृदि स्तम्भो विष्टम्भो गौरवारुचि। अरतिर्बलहानिश्च धातूनां पाक लक्षणम्।

M.Ni. 2/66-73 (Madhukoṣa)

Dhātupāka and *malāpāka* (*doṣa pāka*) are two different process responsible for the prognosis of diseases.

Dhātupāka means worsening of the disease condition due to its advance stage along with loss of strength and elimination of *dhātus* via *mūtrādi* excreta.

Symptoms

- Loss of sleep
- Stiffness in cardiac region
- Constipation
- Heaviness
- Anorexia
- *Malaise*
- Loss of strength

Dhātupāka causes damage to cells and tissues. That's why this stage is considered as a serious stage in the progress of pathogenesis of diseases. *Dhātus* doesn't perform their normal functions as a result variation observed in normal values of *dhātu*.

ओजोवह स्त्रोतो दुष्टि लक्षण/त्रयो ओजोदोषाः (Ojovaha Srotoduṣṭi Lakṣaṇa/Trayo Ojodoṣāḥ)

Three kinds of *Ojodoṣa* manifests are as follows :

तस्य विस्त्रंसो व्यापत् क्षय इति त्रयो दोषाः। *S. Su 15/24*

Ojodoṣa i.e. abnormalities in *ojas* is of 3 kinds i) *Ojo visraṁsa* ii) *Ojo vyāpat* and iii) *Ojaḥkṣaya.*

ओजो विस्रंस (Ojo Visraṁsa)

विस्त्रंसः स्थानात्च्युतिरभिघातादिभि रेव।

S. Su 15/24 (Dalhaṇa)

Visraṁsa means displacement from its normal place.

सन्धि विश्लेषो गात्राणां सदनं दोष च्यवनं क्रियासन्निरोधश्च विस्त्रंसे। *S. Su 15/24*

Clinical features due to *oja visraṁsa* are as follows–

- Looseness of the joints.
- Weakness of the body.
- Displacement of the *doṣās* from their respective seats.
- Impairment in activities or sluggish behaviour.

ओजो व्यापत् (Ojo Vyāpat)

व्यापत् अन्यथापत्तिः सा दुष्टदोषदूष्य संसर्गात्।

S. Su 15/24 (Dalhaṇa)

Vyāpat means *ojas* gets *vitiated* by *duṣṭa doṣa* and *duṣya.*

स्तब्धगुरुगात्रता वातशोफो वर्णभेदो ग्लानिस्तन्द्रा निद्रा च व्यापन्ने। *S. Su 15/24*

General symptomatology due to *ojo vyāpat* are as follows–

- Stiffness and heaviness in body.
- Swelling due to *vāta.*
- Discolouration or loss of complexion.
- Exhaustion
- Stupor
- Excess sleep

ओजोक्षय (Clinical Features of Ojaḥkṣaya)

क्षयः स्वप्रमाणात्। *S. Su 15/24 (Dalhaṇa)*

Decrease in its quantity.

मूर्च्छा मांस क्षयो मोहः प्रलापो मरण मिति च क्षये।

S. Su 15/24

- Fainting
- Wasting of muscles
- Unconsciousness
- Delirium
- Death

बिभेति दुर्बलोऽभीक्ष्णं ध्यायति व्यथितेन्द्रियः दुश्छायो दुर्मना रूक्षः क्षामश्चैवौजसः क्षये ।

C. Su 17/73; A. S. Su 19/32-33

- Fear complex develops or full of fear
- General weakness
- Worry
- Discomfort in sense organs
- Loss of complexion
- Unstable mind
- Roughness
- Emaciation

ओजोवृद्धि लक्षण (Ojo Vṛddhi Lakṣaṇa)

ओजो वृद्धौ हि देहस्य तुष्टिपुष्टि बलोदयः ।

A. S. Su 19/34

Increased *ojas* is responsible for unique growth, nourish-ment and promotes strength.

ओजोवह स्त्रोतो दुष्टि विकार (Ojovaha Srotoduṣṭi Vikāra)

Role of Ojas in the Genesis of Various Disorders

...... तमभिन्यासमित्याहुर्हतौजसमथापरे । *S. Utt 39/41*

Abhinyāsa jvara is also called *hataujasa jvara* by others. Due to loss or decrease of *ojas,* this condition is stated to difficult to cure.

Ojo Nirodhaja Jvara

ओजो विस्त्रंसते यस्य पित्तनिलसमुच्छ्रयात् ।
स गात्रस्तम्भशीताभ्यां शयनेप्सु रचेतनः ।
अपि जाग्रत् स्वपन् जन्तु स्तन्द्रालुश्च प्रलापवान् ।
संहृष्टरोमा स्त्रस्ताङ्गो मन्दसन्तापवेदनः ।
ओजो निरोधजं तस्य जानीयात् कुशलो भिषक् ।
सप्तमे दिवसे प्राप्ते दशमे द्वादशोऽपि वा ।
पुनर्घोरतरो भूत्वा प्रशमं याति हन्ति वा ।

S. Utt 39/43-46

Ojonirodhaja jvara manifest due to depletion of *ojas* by aggravated *pitta* and *vāta.*

Clinical features :

- Stiffness all over the body
- Coldness
- Desire to sleep always
- Unconsciousness
- Disturbed sleep (i.e. sleep for a while followed by awakening oftenly).
- Stupor
- Delirium
- Horripilations
- Debility
- Mild increase of temperature and discomfort.

Time Period for Pacification or Kill

Symptoms greatly aggravated on seventh day, tenth day and 12th day or symptoms may subside on seventh day, tenth day and 12th day.

शोष (*Śoṣa*)

संशोषणाद्रसादीनां शोष......... ।*S. Utt 41/4*

In case of *śoṣa roga* there will be severe dryness or extreme depletion of tissues leading to loss of ojas.

मूर्च्छा (Mūrchā)

.........संज्ञानाशो बलस्य च । *S. Utt 46/5*

Unconsciousness, loss of strength are the *pūrvarupa* observed in *mūrchā.*

ज्वर (Jvara)

रोगगद् सर्वभूतानामन्तकृद्दारुणो ज्वरः । *C. Ci 3/345*

Jvara is the king of all diseases. It causes death to all creatures on earth and which is seriously afflicting individual.

प्रमेह (Prameha)

तथा प्रमेहेऽर्द्धाञ्जलिपरिमितमेवौजः क्षीयते, नाष्टबिन्दुकम् अस्य हि किञ्चित् क्षयेऽपि मरणं भवति, प्रमेहे तु ओजःक्षये जीवत्येव तावत् । *C.Su 30/6-7 (Cakrapāṇi)*

In case of *prameha, apara* or *ardhāñjali ojas* is involved and not the *para ojas* because even slight reduction of *para ojas* leads to death. In *madhumeha,* inspite of reduction of *ojas* i.e. *apara ojas* person still survives.

पाण्डु (Pāṇḍu)

तत्तो वर्णं बल स्नेहा ये चान्येऽप्योजसो गुणाः।
C. Ci 16/5-6

Due to excessive excacerbation of three *doṣās* espescially *pitta* afflicts *dhātus* as a result complexion, strength, unctousness and *ojas* get exceedingly reduced leading to development of *pāṇḍu roga.*

राजयक्ष्मा (Rājayakṣmā)

तस्मिन् काले पचत्यग्निर्यदन्नं कोष्ठसंश्रितम्।
मलीभवति तत् प्रायः कल्पते किञ्चिदोजसे।
तस्मात् पुरीषं संरक्ष्यं विशेषाद्राजयक्ष्मिणः।
C. Ci. 8/41-42

Disturbed functions of agni leads to manifestation of *kiṭṭa* (waste substance) in excess as a result ojas diminishes. That's why *mala* has to be protected to support the body.

उदानावृतप्राण (Udānāvṛta Prāṇa)

कर्मौज बल वर्णानां नाशो.............. ।
उदानोनावृते प्राणे.............. । *C. Ci. 28/208*

Loss of activities, *oja, bala* and complexion is observed in *udānāvṛta prāṇa*.

बल विस्त्रंस (Bala Visraṁsa)

Some people says that *bala* having three kinds of abnormalities.

त्रयो दोषा बलस्योक्त्ता व्यापद्विस्त्रंसनक्षयाः । *S. Su 15/25*

Bala abnormalities is of 3 kinds namely *bala vyāpat, bala visraṁsa* and *balakṣaya.*

विश्लेषसादौ गात्राणां दोषविस्त्रंसनं श्रमः।
अप्राचुर्यं क्रियाणां च बलविस्त्रंस लक्षणम्।
S. Su 15/26

Symptoms observed due to *bala visraṁsa* are as follows–

- Looseness of joints
- Debility
- Displacement of three *doṣās*
- Fatigue
- Impaired body functions

बल व्यापत् (Bala Vyāpat)

गुरुत्वं स्तब्धताऽङ्गेषु ग्लानिर्वर्णस्य भेदनम्।
तन्द्रा निद्रा वातशोफो बलव्यपदि लक्षणम्।
S. Su 15/26-27

Symptoms due to *bala vyāpat* are as follows–

- Heaviness and stiffness in body
- Exhaustion
- Discolouration
- Stupor
- Excessive sleep
- Swelling due to *vāta*

बल क्षय (Bala Kṣaya)

मूर्च्छा मांसक्षयो मोहः प्रलापोऽज्ञानमेव च पूवोक्तानि च लिङ्गानि मरणं च बलक्षये । *S. Su 15/27*

Symptoms due to *bala kṣaya* are as follows–

- Fainting
- Depletion of muscles
- Unconsciousness
- Delirium
- Improper perception of knowledge
- Death

Prognosis of Oja and Bala Abnormalities

तत्र विस्त्रंसे व्यापन्ने च क्रियाविशेषैर विरुद्धैर्बलमाप्यायचेत्; इतरं तु मूढ सज्ञं वर्जयेत् । *S. Su 15/28*

Ojo visraṁsa and *vyāpat* are curable by adopting treatments which are not opposite. *Ojokṣaya* is incurable entity because it produces due to improper understanding.

Etymological Derivation of Asātmya and Its Current Understanding

The word *Asatmya* may be written as *Asātmyaḥ, Asātmyā and Asātmyaṁ* त्म्यः-त्म्या-त्म्यं which means unwholesome and disagreeing with (as food).

Critical Evaluation of Asātmya

A thing which is not adjusted by body cells is regarded as *Asātmya* or unwholesome. It is also called *Anupaśaya* or *Ahīta* or *Apathya*. It may be said that *Anupaśaya* is opposite to *Upaśaya*, which is not suitable to the body or yield abnormal reactions inside the body or does not give happiness to the body; this is also termed as *Vyādhi Asātmya.* In other word it can be said that the factor or particles which brings changes in normal physiology or yield exaggerated immune response or causes tissue injury against its own tissues or damage the dhatus is known as *Asātmya.* In a nut shell it can be correlated to hypersensitivity reactions, auto immunity, substance dependence and substance abuse and allergy. The dosas (*vāta, pitta* and *kapha*) never destroy each other during their equilibrium state. If they coexist in a non-harmonious state causes variety of diseases. This happens because of their *asahaja-sātmya* (un-natural wholesome disposition of coexistence). Mainly diseases of immune system namely auto immune diseases, hypersensitivity reactions, atopic allergy, immunodeficiency and Substance use disorders may also be described as substance dependence and substance abuse may be correlated to *Asātmya* based on their similar actions inside the body. immunodeficiency may be correlated to *Asātmya* based on their similar actions inside the body.

1. Hypersensitivity reactions- An exaggerated immune response to normally encountered pathogens is known as hypersensitivity reactions.
2. Autoimmunity – A tissue injury is caused by the immunologic reaction of the organism against its own tissues. On the other hand, the presence of antibodies or T lymphocytes that react with self-antigens and does not necessarily imply that the self-reactivity has pathogenic consequences. It is present in all individuals; however, autoimmune disease represents the end result of the breakdown of one or more of the basic mechanisms regulating immune tolerance.
3. Atopic allergy - It implies a familial tendency to manifest such conditions as asthma, rhinitis, urticaria, and eczematous dermatitis (atopic dermatitis) alone or in combination, and in association with the presence of IgE. However, individuals without an atopic background may also develop hypersensitivity reactions, particularly urticaria and anaphylaxis, associated with the presence of IgE.
4. Substance use disorders may also be described as *substance dependence* and *substance abuse.* It is unfortunate that the term *substance dependence* instead of addiction is used, because dependence can develop without addiction, and addiction involves much more than dependence per se. Physical dependence develops through resetting of homeostatic cellular mechanisms to permit normal function despite the continued presence of a drug; when drug intake is terminated abruptly, a withdrawal syndrome emerges. Withdrawal from alcohol or other sedative-hypnotics causes nervous system hyperactivity, whereas withdrawal from psychostimulants produces fatigue and sedation. *Tolerance* is a reduction in response to a drug, which like dependence, develops after repeated use. It results from a change in drug metabolism (pharmacokinetic tolerance) or cell signaling (pharmacodynamic tolerance).

Immunodificiency

A person who is accustomed to take only one taste food is having less immunity to fight against diseases. Hence these individuals are having less ability to fight against the antigens.

Grāmya Āahāra-(Erratic Dietetic Pattern) Leads To Immunodeficiency

Regular consumption of following diet pattern and activities causes immunodeficiency and manifest deteriorating effects in the body. Intake of substandard (*Grāmya*) diet and ingredients of food which are sour, saline, pungent and alkaline; intake of dry vegetables, meat, sesame seeds and pastries; intake of germinated cereals and pulses, freshly harvested corns with bristles and pulses, ingredients which are mutually contradictory, unwholesome and ununctuous, saline and *abhiṣyandi* (those which obstruct the channels of circulation); intake of softened, heavy, putrid and stale food; those who mostly indulge in irregular intake of food or taking food before the previous meal is digested; day sleep, sexual enjoyment with women and alcoholic drinks; excessive physical strain and irregular/improper exercise; excessive fear, hunger, grief, greed, infatuation and overwork[6].

Asātmya as Etiology for many Diseases

Irregular dieting as etiological factors for many diseases. When an individual takes different types of drinks and diets, viz. drinkables, eatables, chewables and lickables without paying proper heed towards their nature, mode of preparation, combination, quantity, locality, time, diatetic rules and wholesomeness for the individual, then *vata, pitta* and *kapha* in his body get imbalanced due to this irregularity. These imbalanced *doṣās* spreads all over the body and when they get localized in view of the obstruction to the entrances of the channels of circulation, then whatever food is taken by the individual is mostly converted into stool and urine rather than *dhātus (*tissue elements) of the body. The afflicted individual is sustained by the retention of the stool. Therefore, the fecal matter of individuals suffering from consumption or others who are extremely emaciated or weak should be retained. *Doṣās* accumulated due to irregular dieting, separately produce the following complications in the body, already depleted, resulting in further emaciation, *Vāta* produces colic pain, malaise, irritation in throat, pain in the sides of the chest, grinding pain in the shoulders, hoarseness of voice and coryza. *Pitta* causes fever, diarrhoea and burning sensation inside the body; and *kapha* causes coryza, heaviness of head, anorexia and coughing. Due to excessive coughing there is injury to the chest (lungs) and the patient spits blood. Because of the discharge of blood he becomes weak.

Therefore, a wise person should take such diet as are not unwholesome from the point of view of nature, mode of preparation, combination, quantity, locality, time, dietetic rules and the wholesomeness for the individual who takes them.

Thus it is said-in view of the association of painful diseases with irregular dieting, a wise person who has control over his senses should take wholesome food in proper quantity and in proper time.

By nature (aṣṭavidha viśeṣāyatana), light things are useful and heavy things, harmful. Processing according to the prescriptions in scriptures is useful, otherwise, it is harmful. Substances grown in despicable lands and intake of food before the digestion of the previous meal are harmful. Habitual intake of harmful things in improper way is harmful and when adopted properly it is useful. (C.S.Ni 6.10-11)

Concept of Viruddha Āhāra and Asātmya

Avasthānusara Hitāhitahāra Sevana (Consumption of suitable and unsuitable diet as per stages or condition of disease):

In *Suśruta saṁhitā* it is mentioned that one can use even unwholesome substances in diseases conditions after examining the disease, suitability, place, time, & physique. This concept was accepted in *Caraka Saṁhitā Sūtra Sthāna* .i.e. even acute poison is converted into the tremendous medicine by the right process of preparation; while even a good medicine may act as an acute poison if wrongly administered. *C.S.Sū.1/126*

Immunopathology

- Immunity and immune pathology are proverbial two edges of 'double edged sword'.
- The structure and function of the normal immune system (immune physiology) is well organised to protect the body against causative agents.
- Antigen may induce specifically sensitised cells having the capacity to recognise, react and neutralise the injurious agent or organisms.
- The antigen may combine with antibody to form antigen-antibody complex.
- A state of balance in the immune responses (humoral or cell-mediated) is essential for

protection against endogenous and exogenous antigens.

Antigen (Ag)

- It is defined as a substance; usually protein in nature, which when introduced into the tissues stimulates antibody production.

Hapten

- It is a non-protein substance which has no antigenic properties, but on combining with a protein can form a new antigen capable of forming antibodies

Antibody (Ab)

- It is a protein substance produced as a result of antigenic stimulation.
- Circulating antibodies are immunoglobulins (Igs) of which there are 5 classes: IgG, IgA, 1gM, IgE and IgD.

Components of Immune System

Immunity or body defence mechanism is divided into 2 types:

- Nonspecific or innate immunity with humeral and cellular components
- Specific or adaptive immunity with humeral and cellular components

Nonspecific or innate immunity

It is considered as the first line of defense without antigenic specificity and its major components are:

- Humoral: comprised by complement.
- Cellular: consists of neutrophils, macrophages, and natural killer (NK) cells.

Specific or adaptive immunity

It is characterised by antigenic specificity and its main components are:

- Humeral: consisting of antibodies formed by B cells.
- Cellular: mediated by T cells.

The various components of both types of immunity are interdependent and interlinked for their functions.

The other components of the immune system are considered below :

1. Lymphocytes
   - Functionally two major lymphocyte populations are identified T and B lymphocytes.
   - B cells differentiate into plasma cells which form specific antibodies.
   - T cells proliferate on coming in contact with appropriate antigen after which the non-specific accessory cells (PMNs and macrophages) play a critical role in completion of immunopathologic reaction.
   - B cells express specific antibodies as immunoglobulins.
   - T cells, on the other hand, have surface molecules expressed at different stages of their development which are characterised by monoclonal antibodies according to the cluster of dfferentiation (CD).
2. Hybridoma Monoclonal Antibodies
3. Effector Lymphocyte Subpopulations
   - Different subpopulations of sensitised lymphocytes (T_{DTH}, CD4+ T cells, or helper T cells; T_{CTL}, CD8+ T cells, or cytotoxic lymphocytes)
   - Unsensitised cells (NK or natural killer cells) can mediate the specific immune responses

Macrophage

- It can recognise the antigen for presenting to immunocompetent T or B cells.
- The phagocytic function of macrophage is performed due to location of surface receptor for Pc fragment of IgG and C_3 complement.
- It can produce interleukin-1 which has a role differentiation stage of T and B lymphocytes.
- The phagocytic function of macrophages is capable of secretion of toxic metabolites.
- These act as powerful effectors cells in some forms of cell-mediated immunity e.g. in delayed hypersensitivity reactions.
- These act as mediators of inflammation in release of prostaglandins, activation of

coagulation factors and in secretion of acute phase reactant proteins by the liver

Role of HLA Complex

The HLA complex is significant in a number of ways:

1. Organ transplantation
2. Regulation of the immune system. Class I and II histocompatibility antigens play a role in regulating both cellular and humeral immunity
3. Association of diseases with HLA.

- Inflammatory such as ankylosing spondylitis.
- Autoimmune disorders such as rheumatoid arthritis, insulin-dependent diabetes mellitus.
- Inherited disorders of metabolism like idiopathic haemochromatosis.

Diseases of Immunity

- The word immunity is synonymous with resistance meaning protection from particular diseases or injuries.
- The term hypersensitivity is interchangeable with allergy meaning a state of exaggerated or altered immune response to a given agent.
- The diseases of the immune system are broadly classified into the following 4 groups:

1. Immunodeficiency disorders
   - These disorders characterised by deficient cellular and/or humoral immune functions
   - This group is comprised by a list of primary and secondary immunodeficiency diseases including the dreaded acquired immunodeficiency syndrome (AIDS).
2. Hypersensitivity reactions
   - It is characterised by hyper function of the immune system and cover the various mechanisms of immunologic tissue injury.
3. Autoimmune diseases
   - These occur when the immune system fails to recognise 'sell' from 'non-self'.
   - A growing number of autoimmune and collagen diseases are included in this group.
4. Possible immune disorders
   - In these disorders the immunologic mechanisms are suspected in their etiopathogenesis.
   - Classical example of this group is amyloidosis

Immunodeficiency Diseases

- Failure or deficiency of immune system, which normally plays a protective role against infections, manifests by occurrence of repeated infections in an individual having immunodeficiency diseases.

Traditionally, immunodeficiency diseases are classified into 2 types:

1. Primary immunodeficiencies
   - It is due to the result of genetic or developmental abnormality of the immune system.
2. Secondary immunodeficiencies
   - These diseases arise from acquired suppression of the immune system.

Immune Deficiency

Consequences of the immunodeficiency :

- The consequences of deficiencies of the immune system include recurrent infections, autoimmunity and susceptibility to malignancy.
- Immune deficiency may arise through intrinsic defects in immune function, but is much more commonly due to secondary causes including infection, drug therapy, malignancy and ageing.
- Many immunodeficiency **diseases** have been described and these are genetically determined and usually present in childhood or adolescence in majority of the patients.
- However, there is considerable overlap and redundancy in the immune network, and some diseases do not fall easily into this classification.

Presenting problems in immune deficiency

Recurrent infections :

- Many patients with an immune deficiency present with recurrent infections.
- Frequent, severe infections or infections caused

by unusual organisms or at unusual sites are the most useful indicator.

Baseline investigations :

- Full blood count/Complete blood count
- White cell differential
- Acute phase reactants (CRP)
- Renal and liver function tests
- Urine dipstick
- Serum immunoglobulins with protein electrophoresis.
- Microbiological
- Virological
- Radiological tests

Immune deficiency and common patterns of infection

Phagocyte deficiency	Complement deficiency	T -lymphocyte deficiency	Antibody deficiency
Bacteria Mycobacterium	Staphylococcus aureus tuberculosis Pseudomonas aeruginosa Serratia marcescens Burkholderia cenocepacia Mycobacterium tuberculosis Atypical mycobacteria	Neisseria meningitidis Haemophilus influenzae Neisseria gonorrhoeae Haemophilus influenzae Streptococcus pneumoniae	Atypical mycobacteria Streptococcus pneumoniae Staphylococcus aureus
Fungi	Candida spp. Aspergillus spp.		Candida spp. Aspergillus spp.
Viruses Enteroviruses virus (CMV)	Epstein-Barr virus (EBV) Herpes zoster		Cytomegalo
Protozoa Pneumocystis jirovecii	Giardia lamblia Toxoplasma gondii Cryptosporidia		

Warning signs of immune deficiency

- ≥ 8 ear infections within 1 year
- ≥ 2 serious sinus infections within 1 year
- ≥ 2 months on antibiotics with little effect
- ≥ 2 pneumonias within 1 year
- Failure of an infant to gain weight or grow normally
- Recurrent deep skin or organ abscesses
- Persistent thrush in mouth or elsewhere on skin after infancy
- Need for intravenous antibiotics to clear infections
- ≥2 deep-seated infections such as sepsis, meningitis or cellulitis
- A family history of primary immune deficiency

Primary phagocyte deficiencies

- Primary phagocyte deficiencies usually present with recurrent bacterial and fungal infections which may affect unusual sites.

Leucocyte adhesion deficiencies

- These are disorders of phagocyte migration, when failure to express adhesion molecules on vascular endothelium results in the inability of phagocytes to exit the blood stream.
- They are characterised by recurrent bacterial infections but sites of infection lack pus or neutrophil infiltration.

- Peripheral blood neutrophil counts may be very high during acute infection because of the failure of mobilised neutrophils to exit blood vessels.

Chronic granulomatous disease

- This is caused by mutations in the genes encoding the NADPH oxidase enzymes, which results in failure of oxidative killing.

Defects in cytokines and cytokine receptors

- Defects of cytokines such as IFN-G, IL-12 or their receptors also result in failure of intracellular killing, and individuals are particularly susceptible to mycobacterial infections.

Complement pathway deficiencies

- Genetic deficiencies of almost all the complement path way proteins have been described.
- Many can present with recurrent infection with encapsulated bacteria, particularly Neisseria species.

Primary deficiencies of the adaptive immune system

Primary T -lymphocyte deficiencies :

- These are characterised by recurrent viral, protozoal and fungal infections
- In addition, many T-cell deficiencies are associated with defective antibody production because of the importance of T cells in providing help for B cells.

Digeorge syndrome

- This results from failure of development of the 3rd/4th pharyngeal pouch, usually caused by a deletion of 22q11.
- It is associated with abnormalities of the aortic arch, hypocalcaemia, tracheo-oesophageal fistulae, cleft lip and palate, and absent thymic development.
- It is charcterised by very low numbers of mature T cells despite normal development in the bone marrow.

Bare lymphocyte syndromes

- These are caused by absent expression of HLA molecules within the thymus.
- If HLA class I molecules are affected, CD8$^+$ lymphocytes fail to develop, while absent expression of HLA class II molecules affects CD4$^+$ lymphocyte maturation.
- In addition to recurrent infections, failure to express HLA class I is associated with systemic vasculitis caused by uncontrolled activation of natural killer cells.

Autoimmune lympoproliferative syndrome

- This is caused by failure of apoptosis of lymphocytes
- It is characterised by accumulation of autoreactive cells causing lymphadeno-pathy, splenomegaly and a variety of autoimmune diseases.

Investigations

- The principal tests for T-lymphocyte deficiencies are a total lymphocyte count and quantitation of lymphocyte subpopulations by flow cytometry.
- Serum immunoglobulins should also be quantified.
- Functional tests of T-cell activation and proliferation may be indicated.
- Patients in whom T-lymphocyte deficiencies are suspected should be tested for HIV infection

Combined B- and T -lymphocyte immune deficiencies

- Severe combined immune deficiency (SCID) is caused by defects in lymphoid precursors and results in the combined failure of B- and T-cell maturation.
- The absence of an effective adaptive immune response causes recurrent bacterial, fungal and viral infections soon after birth.

Primary antibody deficiencies

- Primary antibody deficiencies are characterised by recurrent bacterial infections, particularly of the respiratory and gastrointestinal tract.

- The most common causative organisms are bacteria such as Strep. pneumoniae and H. influenzae.
- Selective IgA deficiency is the most common primary immune deficiency

Common variable immune deficiency (CVID)

- Common variable immune deficiency (CVID) is a heterogeneous adult-onset primary immune deficiency of unknown cause.
- It is characterised by low serum IgG levels and failure to make antibody responses to exogenous pathogens.

Investigations

- Serum immunoglobulins should be measured in conjunction with protein and urine electrophoresis to exclude secondary causes of hypogammaglobulinaemia.
- Specific antibody responses to known pathogens should be assessed by measuring IgG antibodies against tetanus, H. influenzae and Strep. pneumoniae

Investigation of primary antibody deficiencies

Circulating lymphocyte

Serum immunoglobulin concentrations					Circulating lymphocyte numbers		
	IgM	**IgG**	**IgA**	**IgE**	**B cells**	**T cells**	**Test immunisation**
Selective IgA deficiency	Normal	Often elevated	Absent	Normal	Normal	Normal	
Common variable immune deficiency	Normal or low	Low	Low or absent	Low or absent	Variable	Variable	No antibody response
Specific antibody deficiency	Normal	Normal	Normal	Normal	Normal	Normal	No antibody response to polysaccharide antigens

Secondary immune deficiencies

- Secondary immune deficiencies are much more common than primary immune deficiencies and occur if the immune system is compromised by external factors
- Common causes include infections, such as HIV and measles, and cytotoxic and immunosuppressive drugs, particularly those used in the management of transplantation, autoimmunity and cancer.
- Physiological immune deficiency occurs at the extremes of life; the decline of the immune response in the elderly is known as immune senescence

Causes of secondary immune deficiency

Physiological

- Ageing
- Pregnancy
- Prematurity

Infection

- HIV
- Mycobacterial infection
- Measles

Iatrogenic

- Immunosuppressive therapy
- Stem cell transplantation
- Antineoplastic agents
- Radiation injury
- Corticosteroids
- Anti-epileptic agents

Malignancy

- B-cell malignancies including leukaemia, lymphoma and myeloma
- Solid tumours

- Thymoma

Biochemical and nutritional disorders

- Malnutrition
- Specific mineral deficiencies, e.g. iron, zinc
- Renal insufficiency/dialysis
- Diabetes mellitus

Other conditions

- Burns
- Asplenia/hyposplenism

Immune Senescence

- **T-cell responses**: decline, with reduced delayed type hypersensitivity responses.
- **Antibody production**: decreased for many exogenous antigens. Although autoantibody production rises, autoimmune disease is less common.
- **Response to vaccination**: reduced, e.g. 30% of healthy older people may not develop protective immunity after influenza vaccination.
- **Allergic disorders and transplant rejection**: less common.
- **Susceptibility to infection**: increased, e.g. community acquired pneumonia by threefold and urinary tract infection by 20-fold. Latent infections including tuberculosis and herpes zoster, may be reactivated.
- Manifestations of inflammation: may be absent, e.g. lack of pyrexia or leucocytosis.

Hypersensitivity Reactions (Immunologic Tissue Injury)

- Hypersensitivity is defined as a state of exaggerated immune response to an antigen.
- The lesions of hypersensitivity (immunologic tissue injury) are produced due to interaction between antigen and product of the immune response.

Depending upon the rapidity and duration of the immune response, two distinct forms of hypersensitivity reactions are recognised:

1. Immediate hypersensitivity reactions

- The reaction occurs immediately (within seconds to minutes) after the administration of antigen.
- It is mediated largely by humoral antibodies.
- It is further subdivided into 3 types—type I, II and III.

2. Delayed hypersensitivity reactions

- The reaction is slower in onset
- Develops within 24-48 hours and the effect is prolonged.
- It is mainly mediated by cellular response.
- Type 1V reaction is the delayed hypersensitivity reaction.

Type I: Anaphylactic. Akopic Reaction

- Anaphylaxis is the opposite of prophylaxis.
- It is defined as a state of rapidly developing immune response to an antigen to which the individual is previously sensitised.
- The response is mediated by humoral antibodies of IgE type or reagin antibodies.
- IgE antibodies sensitise basophils of peripheral blood or mast cells of tissues leading to release of pharmacologically-active substances called anaphylactic mediators namely histamine, serotonin, vasoactive intestinal peptide (VIP), chemotactic factors of anaphylaxis for neutrophils and eosinophils, leukotrienes B_4 and D_4, prostaglandins (thromboxane A_2, prostaglandin D_2 and E_2) and platelet activating factor.

Anaphylactic mediators bring following changes :

- Increases vascular permeability
- Smooth muscle contraction
- Early vasoconstriction followed by vasodilatation
- Shock
- Increases gastric secretions
- Increases nasal and lacrimal secretions.

The clinical examples of anaphylaxis may be of 2 types: systemic or local.

Systemic anaphylaxis : Examples

- Administration of antisera e.g. anti-tetanus serum (ATS)

- Administration of drugs e.g. penicillin;
- Sting by wasp or bee.

Systemic anaphylaxis: Clinical features

- Itching
- Erythema
- Contraction of respiratory bronchioles
- Diarrhoea
- Pulmonary oedema,
- Pulmonary haemorrhage
- Shock
- Death

Local anaphylaxis: Examples

- Hay fever (seasonal allergic rhinitis) due to pollen sensitisation of conjunctiva and nasal passages
- Bronchial Asthma due to allergy to inhaled allergen like house dust
- Food allergy to ingested allergens like fish, cows milk etc;
- Cutaneous anaphylaxis due to contact of antigen with skin characterised by urticaria, wheal and flare
- Angioedema, an autosomal dominant inherited disorder characterised by laryngeal oedema, oedema of eyelids, lips, tongue and trunk.
- Atopic reactions : 50% of these conditions are familial with genetic predisposition

Type II : Cytotoxic Reactions

- This type of reactions causes injury to the cell because humoral antibodies combine with cell surface antigens
- Blood cells being affected more commonly.

Three types of mechanisms are involved in mediating cytotoxic reactions:

1. Cytotoxic antibodies to blood cells.
   - Autoitnmune haemolytic anaemia
   - Transfusion reactions
   - Haemolytic disease of the newborn (erythroblastosis foetalis)
   - Idiopathic thrombocytopenic purpura (ITP)
   - Leucopenia
   - Formation of drug-induced cytotoxic antibodies (penicillin, methyl dopa, rifampicin etc).
2. Cytotoxic antibodies to tissue components.
   - Graves disease (primary hyperthyroidism)
   - Myastenia gravis
   - Male sterility
3. Antibody-dependent cell-mediated cytotoxicity (ADCC).

The target cells killed by this mechanism are tumour cells, parasites etc.

Type III : Immune Complex Reaction

- These reactions result from formation of immune complexes by direct antigen-antibody (Ag-Ab) combination as a result of which the complement system gets activated causing cell injury.

Two types of antigens can cause immune complex- mediated tissue injury:

1. Exogenous antigens :
   - Such as infectious agents (bacteria, viruses, fungi, parasites)
   - Certain drugs and chemicals
2. Endogenous antigens
   - Such as blood components (immunoglobulins, tumour antigens) and antigens in cells and tissues (nuclear antigens in SLE).
   - Depending upon the distribution and location of antigens, type III reactions are of 2 types:

1. Local Immune Complex Reaction
   - Arthus reaction
   - It is a localised inflammatory reaction, usually an immune complex vasculitis of skin

   Local Immune Complex Reaction diseases
   - Injection of antitetanus serum
   - Farmer's lung in which there is allergic alveolitis in response to bacterial antigen from mouldy hay.
2. Systemic Immune Complex Reaction

Circulating immune complex disease or serum sickness :

- After the antigen is introduced into the circulation, it initiates formation of antibodies which react with antigen to form circulating Ag-Ab complexes.

- These complexes are then deposited at different tissue sites containing basement membrane exposed to circulating blood e.g. basement membrane of renal glomeruli, lungs, choroid plexus of brain, uveal tract of eye, synovial membrane of joints resulting into acute inflammatory reaction and activation of the complement system with elaboration of biologically-active compounds such as chemotactic factors, vasoactive amines and anaphylatoxins. The immune complexes are phagocytosed by leucocytes drawn at the site by chemotactic factors.

Systemic Immune Complex Reaction diseases

Various forms of glomerulonephritis :

- Acute glomerulonephritis
- Membranous glomerulonephnitis
- Glomerulonephritis in SLE (lupus nephritis).

Collagen diseases

- SLE
- Polyarteritis nodosa
- Scleroderma
- Rheumatoid arthritis
- Sjogren's syndrome
- Dermatomyositis.

Goodpasture's syndrome

- **Arthritis** occurring transiently during infections,
- Uveitis
- Skin diseases

Type IV: Cell-Mediated Reaction

- This type of hypersensitivity is mediated by specifically- sensitised T lymphocytes produced in the cell-mediated immune response.

Cell-mediated reactions are of 2 main types :

1. **Classical delayed hypersensitivity :** It is mediated by specifically sensitised CD4+ T cell subpopulation on contact with antigen.

   The classical example of delayed hypersensitivity

   Tuberculin reaction /tuberculin skin test

Tuberculin negative : On intradermal injection of tuberculoprotein (PPD), an unsensitised ind ividual develops no response (tuberculin negative).

Tuberculin positive : A person who has developed cell-mediated immunity to tuberculoprotein as a result of BCG immunisation or has been exposed to tuberculous infection develops typical delayed inflammatory reaction, reaching its peak in 48 hours (tuberculin positive).

Other examples of delayed hypersensitivity response

- Tuberculosis
- Tuberculoid leprosy
- Typhoid fever
- Contact dermatitis due to allergic response to a number of chemicals and allergens

2. **T cell-mediated cytotoxicity :** CD8+subpopulation of T Lymphocytes are the cytotoxic T cells (T_{CTL}) and are generated in response to antigens like virus-infected cells, tumour cells and incompatible transplanted tissue or cells.

Gell and Coombs classification of hypersensitivity diseases Example of disease in :

Type	Mechanism	Response to exogenous agent	Example of autoimmune disease
Type I Immediate hypersensitivity	IgE-mediated mast cell degranulation	Allergic disease	None described
Type II Antibody-mediated	Binding of cytotoxic IgG or IgM antibodies to antigens on cell rejection surface causes cell killing	ABO blood transfusion reaction Hyperacute transplant	Autoimmune haemolytic anaemia Idiopathic thrombocytopenic purpura Goodpasture's disease SLE
Type III	IgG or IgM antibodies bind soluble antigen to form immune complexes pathway activation	Serum sickness Immune complex-mediated Farmer's lung which trigger classical complement	
Type IV Delayed type	Activated T cells, phagocytes and NK cells	Acute cellular transplant rejection Nickel hypersensitivity	Type 1 diabetes Hashimoto's thyroiditis

Autoimmunity/Autoimmune Diseases

- It is a state in which the body's immune system fails to distinguish between 'self' and 'non-self'
- This type of reaction leading to formation of autoantibodies against one's own tissue antigens.
- In other words, there is loss of tolerance to one's own tissues
- Autoimmunity is the opposite of immune tolerance.

Immune tolerance

- Immune tolerance is a normal phenomenon present since foetal life and is defined as the ability of an individual to recognise self tissue and antigens.
- Normally, the immune system of the body is able to distinguish self from non-self antigens.

Autoimmune Disease

- Autoimmunity can be defined as the presence of immune responses against self tissue, and is to some extent ubiquitous.
- It is often a harmless phenomenon, identified only by the presence of low titre autoantibodies or autoreactive T cells.
- However, autoimmune diseases occur if these responses cause significant organ damage.
- These are a major cause of chronic morbidity and disability, affecting up to 1 in 30 adults at some time

Classification of autoimmune diseases

- The spectrum of autoimmune diseases is broad.
- These diseases be classified as organ-specific or multisystem or by the predominant mechanism responsible for tissue damage.

The spectrum of autoimmune disease

Type	Disease
Organ-specific Immune response directed against localised antigens	Graves' disease Hashimoto's thyroiditis Addison's disease Pernicious anaemia Type 1 diabetes Sympathetic ophthalmoplegia

	Goodpasture's syndrome Pemphigus vulgaris Bullous Pemmhigoid Idiopathic thrombocytopenic purpura Autoimmune haemolytic anaemia Myasthenia gravis Primary antiphospholipid syndrome Rheumatoid arthritis Dermatomyositis Primary biliary cirrhosis Autoimmune hepatitis Sjogren's syndrome
Multisystem Immune response directed to widespread target antigens	Systemic sclerosis Mixed connective tissue disease SLE

Physiology and pathology of autoimmunity

Immunological tolerance :

- It is the process by which the immune system distinguishes self from foreign tissue, failure of which may result in autoimmune disease.
- Central tolerance occurs during lymphocyte development and operates in the thymus and bone marrow.
- T and B lymphocytes that recognise self antigens are eliminated before they develop into fully immunocompetent cells.
- This process is most active in fetal life, but continues throughout life as immature lymphocytes are generated.
- Some autoreactive cells inevitably evade deletion and escape into the peripheral circulation.
- These cells are controlled through peripheral tolerance mechanisms.
- These include the suppression of autoreactive cells by regulatory T cells, and the generation of hyporesponsiveness ('anergy') in lymphocytes which encounter antigen in the absence of the co-stimulatory signals that accompany inflammation.
- Some tissues such as the eye are not normally patrolled by lymphocytes.
- Antigens within these 'immunologically privileged' sites are inaccessible to autoreactive cells.

Factors predisposing to autoimmune disease

- Both genetic and environmental factors contribute.
- Autoimmune diseases are much more common in women than in men, for reasons which remain unclear.
- The most important genetic determinants of autoimmune susceptibility are the HLA genes, reflecting their importance in shaping lymphocyte responses
- Other susceptibility genes include those determining cytokine activity, co-stimulation and cell death.
- Several environmental factors can trigger autoimmunity in genetically predisposed individuals.
- The most widely studied of these is infection, as occurs in acute rheumatic fever following streptococcal infection or reactive arthritis following bacterial infection.
- A number of mechanisms have been postulated, such as cross-reactivity between the infectious pathogen and self determinants (molecular mimicry), and release of sequestered antigens, which are not usually visible to the immune system, from damaged tissue.
- Alternatively, infection may result in the production of inflammatory cytokines which overwhelm the normal control mechanisms that prevent bystander damage.
- Occasionally, the development of autoimmune disease is a side-effect of drug treatment. For example, the metabolic products of the anaesthetic agent halothane bind to liver enzymes, resulting in a structurally novel protein.
- This is recognised as a new (foreign) antigen by the immune system, and the autoantibodies

and activated T cells directed against it may cause hepatic necrosis.

HLA associations in autoimmune disease

Disease	HLA association	Relative risk
Ankylosing spondylitis	B27	-90:1
Type 1 diabetes	DR3/DR4	-20:1
Rheumatoid arthritis	DR4	-5:1
Graves' disease	DR3	-5:1
Myasthenia gravis	DR3	-3:1

Investigations in autoimmunity

Autoantibodies

- An increasing number of autoantibodies can be identified in the laboratory and are useful in disease diagnosis and monitoring.
- Antibody is quantified either by titre (the minimal dilution at which the antibody can be detected) or by concentration in standardised units.

Cryoglobulins

- Cryoglobulins are antibodies directed against other immunoglobulins that form immune complexes which precipitate in the cold.

They are classified into three types on the basis of the properties of the immunoglobulin involved

Testing for cryoglobulins requires the transport of a serum specimen to the laboratory at 37°C.

Cryoglobulins should not be confused with cold agglutinins; the latter are autoantibadies specifically directed against the I/i antigen on the surface of red cells, which can cause intravascular haemolysis in the cold

Measures of complement activation Quantitation of complement components may he useful in the evaluation of immune complex-mediated diseases. Classical complement pathway activation leads to a decrease in circulating (unactivated) C4, and is often also associated with decreased C3 levels. Serial measurement of C3 and C4 is a useful surrogate measure of immune complex formation.

Cell Injury and Cellular Adaptations

Introduction to Cell Injury and Cellular adaptations

Causes of cell injury are for both reversible and irreversible injuries. They may be broadly classified into two large groups:

A. Genetic causes

B. Acquired causes

The genetic causes of various diseases are discussed:

1. Developmental defects
2. Cytogenetic (Karyotypic defects)
3. Single-gene defects (Mendelian disorders)
4. Multifactorial inheritance disorders
5. Storage diseases (Inborn errors of metabolism)

Acquired causes

- The acquired causes of disease comprise vast majority of common diseases afflicting mankind.
- The acquired causes of cell injury can be further categorised as under:
- Hypoxia and ischemia
- Physical agents
- Chemical agents and drugs
- Microbial agents
- Immunologic agents
- Nutritional derangements
- Psychological factors.

Hypoxia and ischemia

- Deficiency of oxygen or hypoxia results in failure of energy and metabolic functions.
- Hypoxia is the most common cause of cell injury and it may be due to reduced supply of blood to cells i.e. ischemia.
- Oxygen deprivation of tissues may result from other causes as well e.g. in anaemia, carbon monoxide poisoning, cardio-respiratory insufficiency, and increased demand of tissues.

Physical Agents

Physical agents in causation of disease namely:

- Mechanical trauma (e.g. road accidents)
- Thermal trauma (e.g. by heat and cold)
- Electricity
- Radiation (e.g. ultraviolet and ionising)
- Rapid changes in atmospheric pressure

Chemicals and Drugs

An ever-increasing list of chemical agents and drugs may cause cell injury.

- Chemical poisons such as cyanide, arsenic, mercury
- Strong acids and alkalis
- Environmental pollutants
- Insecticides and pesticides
- Oxygen at high concentrations
- Hypertonic glucose and salt
- Agents such as alcohol and narcotic drugs
- Therapeutic administration of drugs

Microbial Agents

Injuries by microbes include the infections by

- Bacteria
- Viruses
- Protozoa
- Other parasites
- Rickettsia
- Fungi
- Metazoa

Immunologic Agents

The diseases of immune system may also result in cell injury. The causes are:

- Hypersensitivity reactions
- Anaphylactic reaction
- Autoimmune diseases

Nutritional Derangements

A deficiency or an excess of nutrients may result in nutritional imbalances and cause cell injury.

Deficiency of nutrients

- Nutritional deficiency diseases may be due to overall deficiency of nutrients (e.g. starvation)
- Protein calorie-marasmus, kwashiorkor
- Minerals
- Trace elements

Nutritional excess

- It is a problem of affluent societies resulting in obesity, atherosclerosis, heart disease, hypertension, joint problems, etc.

Psychological Factors

- There are no specific biochemical or morphologic changes in common acquired mental diseases due to mental stress, strain, anxiety, overwork and frustration e.g. depression, schizophrenia.
- The problems of drug addiction, alcoholism and smoking result in various organic diseases such as liver damage, chronic bronchitis, lung cancer, peptic ulcer, hypertension, ischemic heart disease, etc.

Pathogenesis of Cell Injury

- The underlying alterations in biochemical systems of cells for reversible and irreversible cell injury by various agents are complex and varied.

The following principles apply in pathogenesis of most forms of cell injury by various agents:

1. **Type, duration and severity of injurious agent:**
   - The extent of cellular injury depends upon type, duration and severity of the stimulus.
   - Small dose of chemical toxin or short duration of ischemia cause reversible cell injury.
   - Large dose of the same chemical toxin or persistent ischemia cause cell death.
2. **Type, status and adaptability of target cell**
   - The type of cell as regards its susceptibility to injury, its nutritional and metabolic status, and adaptation of the cell to hostile environment determine the extent of cell injury.
   - Skeletal muscle can withstand hypoxic injury for long time.
   - Cardiac muscle suffers irreversible cell injury after 30-60 minutes of persistent ischemia.

Underlying intracellular phenomena

- The two essential biochemical phenomena underlie all forms of cell injury to distinguish between reversible and irreversible cell injury:

- Inability to reverse mitochondrial dysfunction by reperfusion or reoxygenation.
- Disturbance in membrane functions in general, and in plasma membrane in particular.

Morphologic consequences

- All forms of biochemical changes with underlying cell injury are expressed in terms of morphologic changes.
- The ultra structural changes become apparent earlier than the light microscopic alterations.
- The morphologic changes of reversible cell injury (i.e., hydropic swelling) appear earlier than morphologic alteration in cell death (e.g., Myocardial infarction).

Pathogenesis of ischemic and hypoxic Injury

- The interruption of blood supply (ischemia) and impaired oxygen supply to the tissues (hypoxia) are most common form of cell injury in human beings.

The underlying intracellular processes and mechanisms involved in reversible and irreversible cell injury by hypoxia and ischemia are described below:

Reversible Cell Injury

- If the ischemia or hypoxia is of short duration, the effects are reversible on rapid restoration of circulation e.g. in coronary artery occlusion, myocardial contractility metabolism and ultrastructure are reversed if the circulation is quickly restored.
- Withdrawal of acute stress that resulted in reversible cell injury can restore the cell to normal state.

Decreased generation of cellular adenosine triphosphate (ATP)

- ATP in human cell is derived from two sources-first, by aerobic respiration or oxidative phosphorylation (which requires oxygen) in the mitochondria, and second, by anaerobic glycolytic pathway (in which ATP is generated from glucose/glycogen in the absence of oxygen).
- Ischemia and hypoxia both limit the supply of oxygen to the cells; thus causing decreased ATP generation from adenosine diphosphate (ADP).
- But in ischemia, aerobic respiration as well as glucose availability is both compromised resulting in more severe effects of cell injury.
- On the other hand, in hypoxia anaerobic glycolytic energy production continues and thus cell injury is less severe.
- Secondly, highly specialised cells such as myocardium, proximal tubular cells of the kidney, and neurons of the CNS are dependent on aerobic respiration for ATP generation and thus these tissues suffer from ill-effects of ischemia more severely and rapidly.

Reduced intracellular pH

- Due to low oxygen supply to the cell, aerobic respiration by mitochondria fails first.
- This is followed by switch to anaerobic glycolytic pathway for the energy (i.e. ATP) requirement.
- This results in rapid depletion of glycogen and accumulation of lactic acid lowering the intracellular pH.
- Early fall in intracellular pH (i.e. intracellular acidosis) results in clumping of nuclear chromatin.

Damage to plasma membrane sodium pump

- Normally, the energy (ATP)-dependent sodium pump (Na+-K+ ATPase) operating at the plasma membrane allows active transport of sodium out of the cell and diffusion of potassium into the cell.
- Lowered ATP in the cell and consequent increased ATPase activity interfere with this membrane-regulated process.
- This results in intracellular accumulation of sodium and diffusion of potassium out of cell. The accumulation of sodium in the cell leads to increase in intracellular water to maintain iso-osmotic conditions (hydropic swelling).

Reduced protein synthesis

- As a result of continued hypoxia, ribosomes are detached from granular endoplasmic reticulum and polysomes are degraded to monosomes, thus causing reduced protein synthesis.

Functional consequences

- Reversible cell injury may result in functional disturbances e.g. myocardial contractility ceases within 60 seconds of coronary occlusion but can be reversed if circulation is restored.

Ultrastructural changes

Reversible injury to the cell causes the following ultrastructural changes:

i) Endoplasmic reticulum: Distension of cisternae by fluid and detachment of membrane-bound polyribosomes from the surface of RER.

ii) Mitochondria: Mitochondrial swelling and phospholipids rich amorphous densities.

iii) Plasma membrane: Loss of microvilli and focal projections of the cytoplasm ('blebs').

iv) Myelin figures: These are structures lying in the cytoplasm or present outside the cell. They are derived from membranes (plasma or organellar) enclosing water and dissociated lipoproteins between the lamellae of injured membranes.

v) Nucleolus: There is segregation of granular and fibrillar components of nucleolus and reduced synthesis of ribosomal RNA.

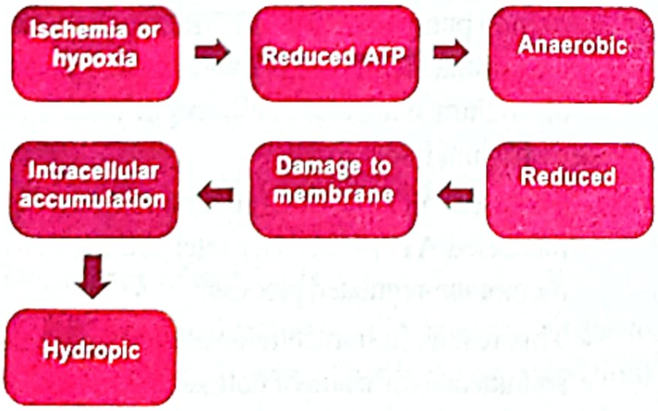


Figure : Pathogenesis of reversible cell injury (Hydropic swelling)

Irreversible Cell Injury

- Persistence of ischemia or hypoxia results in irreversible changes in structure and function of the cell (cell death).

Two essential phenomena always distinguish irreversible from reversible cell injury:

- Inability of the cell to reverse mitochondrial dysfunction on reperfusion or reoxygenation.
- Disturbance in cell membrane function in general, and in plasma membrane, in particular.
- In addition, there is continued depletion of proteins, leakage of lysosomal enzymes into the cytoplasm, reduced intracellular pH and further reduction in ATP.

Mitochondrial dysfunction

- As a result of continued hypoxia, a large 'cytosolic influx of Ca++ ions occurs, especially after reperfusion of irreversibly injured cell, which is taken up by mitochondria and is the cause of mitochondrial dysfunction.
- Morphologically, mitochondrial changes seen are vacuoles in the mitochondria and deposits of amorphous calcium salts in the mitochondrial matrix.

Membrane damage

- Defect in membrane function in general, and plasma membrane in particular, is the most important event in irreversible cell injury in ischaemia.
- The mechanisms underlying membrane damage are described below:
- Accelerated degradation of membrane phospholipid.
- Cytoskeletal damage.
- Toxic oxygen radicals.
- Break down products of lipid.
- Reperfusion damage

Hydrolytic enzymes

- Damage to lysosomal membranes is followed by liberation of hydrolytic enzymes (RNAase, DNAase, proteases, glycosidases, phosphatases, and cathepsin) which on activation cause enzymatic digestion of cellular components and induce the nuclear changes (pyknosis, karyolysis and karyorrhexis) and hence cell death.

- The dead cell is eventually replaced by masses of phospholipids called myelin figures which are either phagocytosed by macrophages or there may be formation of calcium soaps.

Serum estimation of liberated intracellular enzymes

- Liberated enzymes leak across the abnormally permeable cell membrane into the serum, the estimation of which may be used as clinical parameters of cell death.
- For example, in myocardial infarction, estimation of elevated serum glutamic oxaloacetic transaminase (SGOT), lactic dehydrogenase (LDH), isoenzyme of creatine kinase (CK-MB), and more recently cardiac troponins (cTn) are useful guides for death of heart muscles.

Ischemia-Reperfusion Injury

Depending upon the duration of ischemia/ hypoxia, restoration of blood flow may result in the following 3 different consequences:

1. From ischemia to reversible injury
2. From ischemia to irreversible injury
3. From ischemia to reperfusion injury

Pathogenesis of Physical Injury

- Injuries caused by mechanical force are of medico-legal significance. But they may lead to a state of shock.
- Injuries by changes in atmospheric pressure (e.g. decompression sickness)
- Radiation injury to human by accidental or therapeutic exposure is of importance in treatment of persons with malignant tumours as well as may have carcinogenic influences

Morphology of Cell Injury

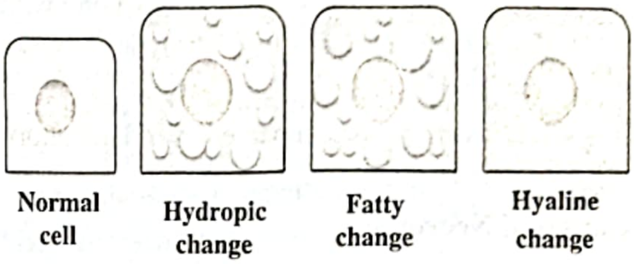
Morphology of Reversible Cell Injury

Following morphologic forms of reversible cell injury are included under this heading:

- Cellular swelling (hydropic change, or vacuolar degeneration)
- Fatty change
- Hyaline change
- Mucoid change

Morphology of Irreversible Cell Injury (Cell Death)

- Cell death is a state of irreversible injury.



- It may occur in the living body as a local or focal change
- Autolysis
- Necrosis
- Apoptosis

The changes that follow it

- Gangrene
- Pathologic calcification,
- Lastly, result in end of the life -somatic death.

Autolysis

- Autolysis ('self-digestion') is disintegration of the cell by its own hydrolytic enzymes liberated from lysosomes.
- Autolysis can occur in the living body when it is surrounded by inflammatory reaction (vital reaction), or may occur as post-mortem change in which there is complete absence of surrounding inflammatory response.

Autolysis is rapid in some tissues rich in hydrolytic enzymes

- Pancreas
- Gastric mucosa

Autolysis is Intermediate in tissues

- Heart

- Liver
- Kidney

Autolysis is slow in tissues

- Fibrous tissues

Morphologically, autolysis is identified by homogeneous and eosinophilic cytoplasm with loss of cellular details and remains of cell, as debris.

Necrosis

- Necrosis is defined as focal death along with degradation of tissue by hydrolytic enzymes liberated by cells
- It is invariably accompanied by inflammatory reaction.

Causes of Necrosis

- Hypoxia
- Chemical and physical agents
- Microbial agents
- Immunological injury

Mechanism of Necrosis

Two essential changes bring about irreversible cell injury in necrosis :

- Cellular digestion by lytic enzymes
- Denaturation of proteins
- These processes are morphologically identified by characteristic cytoplasmic and nuclear changes in necrotic cell
- The cytoplasm appears homogeneous ant intensely eosinophilic.
- Occasionally, it may show vacuolation or dystrophic calcification.
- The nuclear change include condensation of nuclear chromatin (pyknosis which may either undergo dissolution (karyolysis) or fragmentation into many granular clumps (karyorrhexis)

Types of Necrosis

Morphologically 5 distinct types of necrosis are identified :

- Coagulative necrosis
- Liquefaction (Colliquative) necrosis
- Caseous necrosis
- Fat necrosis
- Fibrinoid necrosis

Coagulative Necrosis

- This is the most common type of necrosis caused by irreversible focal injury mostly from sudden cessation of blood flow (ischemia), less often from bacterial and chemical agents.

Organs commonly affected are

- Heart
- Kidney
- Spleen

Grossly, foci of coagulative necrosis in the early stage

- Pale, firm and slightly swollen

Grossly, foci of coagulative necrosis with progression

- More yellowish, softer, and shrunken.

Microscopically

- 'Tombstones' i.e. outlines of the cell are retained so that the cell type can still be recognised but their cytoplasmic and nuclear details are lost.
- Thenecrosed cells are swollen and appear more eosinophilic than the normal.
- Eventually, the focus of necrosis is infiltrated by inflammatory cells and the dead cells are phagocytosed leaving granular debris and fragments of cells.

Liquefaction (Colliquative) Necrosis

- Liquefaction or colliquative necrosis occurs commonly due to ischemic injury and bacterial or fungal infections.
- It occurs due to degradation of tissue by the action of powerful hydrolytic enzymes.

The common examples

- Infarct brain
- Abscess cavity

Grossly, foci of Liquefaction or colliquative necrosis in the early stage

- The affected area is soft with liquefied centre containing necrotic debris

Grossly, foci of Liquefaction or colliquative necrosis with progression

- Formation of cyst wall

Microscopically

- The cystic space contains necrotic cell debris and macrophages filled with phagocytosed material.
- The cyst wall is formed by proliferating capillaries, inflammatory cells, and gliosis (proliferating glial cells) in the case of brain
- Proliferating fibroblasts in the case of abscess cavity

Caseous Necrosis

- Caseous necrosis is found in the centre of tuberculous infections.
- Combined features of both coagulative and liquefactive necrosis are observed.

Grossly, foci of caseous necrosis develops following changes

- Resemble dry cheese and are soft, granular and yellowish.

Microscopically

- Thenecrosed foci are structureless, eosinophilic and contain granular debris
- The surrounding tissue shows characteristic granulomatous inflammatory reaction consisting of epithelioid cells with interspersed giant cells of Langhans' or foreign body type and peripheral mantle of lymphocytes.

Fat Necrosis

It is a special form of cell death occurring at two anatomically different locations but morphologically similar lesions.

- Acute pancreatic necrosis
- Traumatic fat necrosis commonly in breasts

Grossly, foci of fat necrosis in the early stage

- Appears as yellowish-white and firm deposits

Grossly, foci of fat necrosis with progression

- Formation of calcium soaps (saponification) imparts the necrosed foci firmer and chalky white appearance.

Microscopically

- The cells have cloudy appearance and are surrounded by an inflammatory reaction. Formation of calcium soaps is identified in the tissue sections as amorphous, granular and basophilic material.

Fibrinoid Necrosis

Fibrinoid necrosis or fibrinoid degeneration is characterised by deposition of fibrin-like material, which has the staining properties of fibrin.

- Immunologic tissue injury-immune complex vasculitis, autoimmune diseases, Arthus reaction, etc.
- Arterioles in hypertension, peptic ulcer, etc.

Microscopically

- Brightly eosinophilic, hyaline-like deposition in the vessel wall or on the luminal surface of a peptic ulcer.
- Local haemorrhages may occur due to rupture of these blood vessels.

Apoptosis

- It is a form of 'coordinated and internally programmed cell death.
- It is of clinical significance in a variety of physiologic and pathologic conditions.
- Apoptosis is a Greek word meaning 'falling off' or 'dropping off'
- The term was first coined in 1972 as distinct from necrosis.

Pathologic Changes

Microscopically

- The apoptotic cells are round to oval shrunken masses of intensely eosinophilic cytoplasm containing condensed or fragmented nuclear chromatin.
- Shrinkage of cell with dense cytoplasm and almost normal organelles.
- Convolutions of the cell membrane with formation of membrane-bound near-spherical bodies called apoptotic bodies containing compacted organelles.

- Chromatin condensation around the periphery of nucleus.
- Characteristically, there is no acute inflammatory reaction.
- Phagocytosis of apoptotic bodies by macrophages takes place at varying speed.
- There may be swift phagocytosis, or loosely floating apoptotic cells after losing contact, with each other and basement membrane as single cells, or may result in major cell loss in the tissue without significant change in the overall tissue structure.

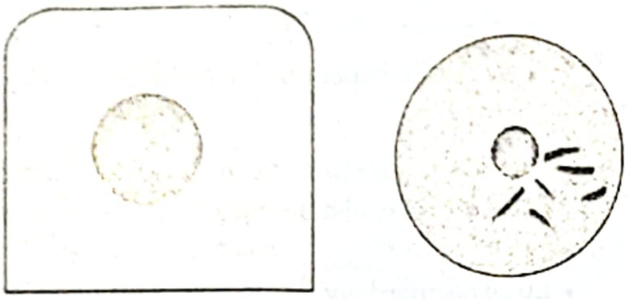


Figure : Comparison of normal and apoptotic cell

Biochemical Changes

Biochemical processes underlying the morphologic changes are as under :

1. Proteolysis of cytoskeletal proteins.
2. Protein-protein cross-linking.
3. Fragmentation of nuclear chromatin by activation of nuclease.
4. Appearance of phosphatidylserine on the outer surface of cell membrane.
5. Appearance of an adhesive glycoprotein thrombospondin on the outer surface of apoptotic bodies seen in some forms of apoptosis.
6. Appearance of phosphatidylserine and thrombospondin on the outer surface of apoptotic cell facilitates early recognition by macrophages for phagocytosis prior to appearance of inflammatory cells.

Identifying Apoptotic Cells

Identifying and counting of apoptotic cells is possible by following methods

- Staining of chromatin, Feulgen, or acridine orange
- Flow cytometry to visualise rapid cell shrinkage
- DNA changes detected by in situ techniques or by gel electrophoresis
- Annexin V as marker for apoptotic cell membrane having phosphatidylserine on the cell exterior.

Apoptosis In Biologic Processes

Apoptosis is responsible for mediating cell death in a wide variety of physiologic and pathologic processes as under:

Physiologic Processes

1. Organised cell destruction in sculpting of tissues during development of embryo.
2. Physiologic involution of cells in hormone dependent tissues e.g. endometrial shedding, regression of lactating breast after withdrawal of breast-feeding, atrophy of cervical epithelium with aging, etc.
3. Normal cell destruction followed by replacement proliferation such as in intestinal epithelium.
4. Involution of the thymus in early age.

Pathologic Processes

1. Cell death in tumours exposed to chemotherapeutic agents.
2. Cell death by cytotoxic T-cells in immune mechanisms such as in graft-versus-host disease and rejection reactions.
3. Cell death in viral infections e.g. formation of Councilman bodies in viral hepatitis.
4. Pathologic atrophy of organs and tissues on withdrawal of stimuli e.g. prostatic atrophy after orchiectomy, atrophy of kidney or salivary gland on obstruction of ureter or ducts, respectively.
5. Progressive depletion of CD4+T cells in the pathogenesis of AIDS.
6. Cell death in response to injurious agents involved in causation of necrosis e.g. radiation, hypoxia and mild thermal injury.

Gangrene

- It is a form of necrosis of tissue with superadded putrefaction.
- The type of necrosis is usually coagulative due to ischaemia (e.g. in gangrene of the bowel, gangrene of the limb)
- Gangrenous necrotising inflammation is characterised by primarily inflammation provoked by virulent bacteria resulting in massive tissue necrosis.

  There are 3 main forms of gangrene :
- Dry Gangrene
- Wet Gangrene
- Gas Gangrene

In any type of gangrene, coagulative necrosis undergoes liquefaction by the action of putrefactive bacteria.

Dry Gangrene

- This form of gangrene begins in the distal part of a limb due to ischemia.
- The typical example is the dry gangrene in the toes and feet of an old patient due to arteriosclerosis.

Other causes of dry gangrene foot

- Thromboangitis obliterans (Buerger's disease)
- Raynaud's disease
- Trauma
- Ergot poisoning

Pathologic Changes

Macroscopically

- The affected part is dry, shrunken and dark black, resembling the foot of a mummy.

Histological findings

- There is necrosis with smudging of the tissue.
- The line of separation consists of inflammatory granulation tissue.

Wet Gangrene

- This occurs in naturally moist tissues and organs such as the mouth, bowel, lung, cervix, vulva etc.
- Diabetic foot is another example of wet gangrene due to high glucose content in the necrosedtissue that favours growth of bacteria.
- Bedsores occurring in a bed-ridden patient due to pressure on sites like the sacrum, buttocks and heels are the other important clinical conditions included in wet gangrene.
- Wet gangrene usually develops rapidly due to blockage of venous and less commonly arterial blood flow from thrombosis or embolism.
- The affected part is stuffed with blood which favours the rapid growth of putrefactive bacteria.
- The toxic products formed by bacteria are absorbed causing systemic manifestations of septicaemia and finally death.
- The spreading wet gangrene lacks clear-cut line of demarcation and may spread to peritoneal cavity causing peritonitis.

Pathologic Changes

Macroscopically

- The affected part is soft, swollen, putrid, rotten and dark.
- The classic example is gangrene of bowel, commonly due to strangulated hernia, volvulus or intussusception.
- The part is stained dark due to the same mechanism as in dry gangrene.

Histologically

- There is coagulative necrosis with stuffing of affected part with blood.
- There is ulceration of the mucosa and intense inflammatory infiltration.
- Lumen of the bowel contains mucus and blood.
- The line of demarcation between gangrenous segment and viable bowel is generally not clear-cut.

Gas Gangrene

- Gas gangrene is a special form of wet gangrene caused by gas forming clostridia (gram-positive anaerobic bacteria) which gain entry into the tissues through open contaminated wounds, especially in the muscles, or as a complication of operation on colon which normally contains clostridia.

- Clostridia produce various toxins, which produce necrosis and oedema locally and are also absorbed producing profound systemic manifestations.

Pathologic Changes

Grossly

- The affected area is swollen, oedematous, painful and crepitant due to accumulation of gas bubbles within the tissues.
- Subsequently, the affected tissue becomes dark black and foul smelling

Microscopically

- The muscle fibres undergo coagulative necrosis with liquefaction.
- Large number of gram-positive bacilli can be identified.
- At the periphery, a zone of leucocytic infiltration, oedema and congestion are found.
- Capillary and venous thrombi are common.

Pathologic Calcification

Deposition of calcium salts in tissues other than osteoid or enamel is called pathologic or heterotopic calcification.

Two distinct types of pathologic calcification are recognised :

Dystrophic calcification

- It is characterised by deposition of calcium salts in dead or degenerated tissues with normal calcium metabolism and normal serum calcium levels.

Metastatic calcification

It occurs in apparently normal tissues and is associated with deranged calcium metabolism and hypercalcemia.

Cellular Adaptations

- The cells make adjustments with the changes in their environment (i.e. adapt)
- The physiologic needs (physiologic adaptation)
- The non-lethal pathologic injury (pathologic adaptation).
- The adaptive responses are reversible on withdrawal of stimulus.
- If the irritant stimulus persists for long time, the cell may not be able to survive and may either die or progress further e.g. cell death in sustained atrophy, progression of dysplasia into carcinoma in situ.

Broadly speaking, such physiologic and pathologic adaptations occur by following processes :

- Decreasing in cell size known as atrophy
- Increasing the cell size known as hypertrophy
- Increasing the number of cells known as hyperplasia
- By changing the pathway of phenotypic differentiation of cells
- Metaplasia - it is the reversible transformation of one differentiated cell type to another differentiated cell type
- Dysplasia - The presence of cells of an abnormal type within a tissue

Mechanism

Various mechanisms which may be involved in adaptive cellular responses include :

- Altered cell surface receptor binding.
- Alterations in signal for protein synthesis.
- Synthesis of new proteins by the target cells such as heat-shock proteins (HSPs).

Atrophy

- Reduction of the number and size of parenchymal cells of an organ or its parts which was once normal is called atrophy

Hypoplasia

Hypoplasia means underdevelopment or incomplete development of a tissue or organ. It properly refers to an inadequate or below-normal number of cells.

Aplasia

- It means extreme failure of development so that only rudimentary tissue is present.
- Itmeans defective development or congenital absence of an organ or tissue.

Causes of atrophy

Atrophy may occur from physiologic or pathologic causes.

Physiologic atrophy

- Atrophy is a normal process of aging in some tissues, which could be due to loss of endocrine stimulation or arteriosclerosis.

For example :

- Atrophy of gonads after menopause.
- Atrophy of brain due to aging (senile atrophy).

Pathologic atrophy

The causes are as under:

Starvation atrophy

- Depletion of carbohydrate and fat stores followed by protein catabolism observed in starvation.
- There is general weakness, emaciation and anemia referred to as cachexia seen in cancer and severely ill patients.

Ischemic atrophy

Gradual diminution of blood supply due to atherosclerosis may result in shrinkage of the affected organ e.g.

i) Small atrophic kidney in atherosclerosis of renal artery.

ii) Atrophy of brain in cerebral atherosclerosis

Disuse atrophy

Prolonged diminished functional activity is associated with disuse atrophy of the organ:

i) Wasting of muscles of limb immobilised in cast.

ii) Atrophy of the pancreas in obstruction of pancreatic duct.

Neuropathic atrophy

Interruption in nerve supply leads to wasting of muscles e.g.

- Poliomyelitis
- Motor neuron disease
- Nerve section.

Endocrine atrophy

Losses of endocrine regulatory mechanism results in reduced metabolic activity of tissues and hence atrophy e.g.

- Hypopituitarism may lead to atrophy of thyroid, adrenal and gonads.
- Hypothyroidism may cause atrophy of the skin and its adnexal structures.

Pressure atrophy

Prolonged pressure from benign tumours or cyst or aneurysm may cause compression and atrophy of the tissues e.g.

i) Erosion of spine by tumour in nerve root.

ii) Erosion of skull by meningioma arising from pia-arachnoid.

iii) Erosion of sternum by aneurysm of arch of aorta.

Pathologic Changes

- The organ is small, often shrunken.
- The cells become smaller in size but are not dead cells
- Shrinkage in cell size is due to reduction in cell organelles, chiefly mitochondria, myofilaments and endoplasmic reticulum.
- There is often increase in number of autophagic vacuoles containing cell debris.
- Theseautophagic vacuoles may persist to form 'residual bodies' in the cell cytoplasm e.g. lipofuscin pigment granules in brown atrophy.

Hypertrophy

- Hypertrophy is an increase in the size of parenchyma tells resulting in enlargement of the organ or tissue, without any change in the number of cells.
- Hypertrophy may be physiologic or pathologic.
- In both cases, it is caused either by increased by without accompanying hyperplasia affects mainly muscles. In non-dividing cells too, only hypertrophy occurs.

Physiologic hypertrophy

Enlarged size of the uterus in pregnancy is an excellent example of physiologic hypertrophy as well as hyperplasia.

Pathologic hypertrophy

Examples of certain diseases associated with hypertrophy are as under:

Hypertrophy of cardiac muscle

Hypertrophy of cardiac muscle may occur in a number of cardiovascular diseases.

A few examples producing left ventricular hypertrophy are:

- Systemic hypertension
- Aortic valve disease (stenosis and insufficiency)
- Mitral insufficiency

Hypertrophy of smooth muscle

- Cardiac achalasia (in oesophagus)
- Pyloric stenosis (in stomach)
- Intestinal strictures
- Muscular arteries in hypertension.

Hypertrophy of skeletal muscle

- Hypertrophied muscles in athletes and manual labourers.

Compensatory hypertrophy

- It may occur in an organ when contralateral organ is removed
- Following nephrectomy on one side in a young patient, there is compensatory hypertrophy as well as hyperplasia of the nephrons of the other kidney.
- Adrenal hyperplasia following removal of one adrenal gland.

Pathologic Changes

- The affected organ is enlarged and heavy.
- For example a hypertrophied heart of a patient with systemic hypertension may weigh 700-800 g as compared to average normal adult weight of 350 g.
- There is enlargement of muscle fibres as well as of nuclei

Ultrastructural level changes

- There is increased synthesis of 'DNA and RNA, increased protein synthesis and increased number of organdies like mitochondria, endoplasmic reticulum and myofibrils.

Hyperplasia

- It is an increase in the number of parenchymal cells resulting in enlargement of the organ or tissue.
- Quite often hyperplasia and hypertrophy occur together
- It occurs due to increased recruitment of cells from G0 (resting) phase of the cell cycle to undergo mitosis when stimulated.
- All body cells do not possess hyperplastic growth potential
- Labile cells (e.g. epithelial cells of the skin and mucous membranes, cells of the bone marrow and lymph nodes) and stable cells (e.g. parenchymal cells of the liver, pancreas, kidney, adrenal, and thyroid) can undergo hyperplasia, while permanent cells (e.g. neurons cardiac and skeletal muscle) have 'little or no capacity for regenerative hyperplastic growth.
- Neoplasia differs from hyperplasia in having hyperplastic growth with loss of growth-regulatory mechanism due to change in genetic composition of the cell.
- Hyperplasia, on the other hand, persists so long as stimulus is present.

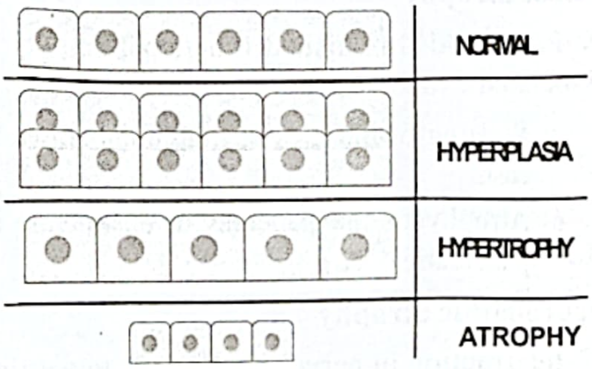


Figure: Modes of cellular adaptation-hyperplasia, hypertrophy and atrophy

Causes

Physiologic and pathologic causes are as follows:

Physiologic hyperplasia

The two most common types are as follows:

Hormonal hyperplasia

It is occurring due to the influence of hormonal stimulation.

- Hyperplasia of female breast at puberty, during pregnancy and lactation.
- Hyperplasia of pregnant uterus
- Proliferative activity of normal endometrium alters a normal menstrual cycle.
- Prostatic hyperplasia in old age.

Compensatory hyperplasia

It is occurring due to removal of part of an organ or a contralateral organ in paired organ :

- Regeneration of the liver following partial hepatectomy
- Regeneration of epidermis after skin abrasion
- Following nephrectomy on one side, there is hyperplasia of nephrons of the other kidney.

Pathologic hyperplasia

Most examples of pathologic hyperplasia are due to excessive stimulation of hormones or growth factors

- Endometrial hyperplasia following oestrogen excess,
- In wound healing, there is formation of granulation tissue due to proliferation of fibroblasts and endothelial cells
- Formation of skin warts from hyperplasia of epidermis due to human papilloma virus.
- Pseudocarcinomatous hyperplasia of the skin.
- Intraductal epithelial hyperplasia in the breast in fibrocystic breast disease

Pathologic Changes

- There is enlargement of the affected organ or tissue and increase in the number of cells.
- This is due to increased rate of DNA synthesis and hence increased mitoses of the cells.

Metaplasia

- It is defined as a reversible change of one type of adult epithelial or mesenchymal cells to another type of adult epithelial or mesenchymal cells, usually in response to abnormal stimuli, and often reverts back to normal on removal of stimulus.
- However, if the stimulus persists for a long time, epithelial metaplasia may transform into cancer.

Metaplasia is broadly divided into 2 types:

- Epithelial
- Mesenchymal

Epithelial Metaplasia

- It is the more common type.
- Themetaplastic change may be patchy or diffuse and usually results in replacement by stronger but less well-specialised epithelium.
- However, the metaplastic epithelium being less well-specialised such as squamous type, results in deprivation of protective mucus secretion and hence more prone to infection.

Mesenchymal Metaplasia

- It is less common
- There is transformation of one adult type of mesenchymal tissue to another.

Dysplasia

- It means disordered cellular development often accompanied with metaplasia and hyperplasia
- It is also referred to as atypical hyperplasia.
- It occurs most often in epithelial cells.

Epithelial dysplasia is characterised by cellular proliferation and cytologic changes.

The changes include:

1. Increased number of layers of epithelial cells
2. Disorderly arrangement of cells from basal layer to the surface layer
3. Loss of basal polarity i.e. nuclei lying away from basement membrane
4. Cellular and nuclear pleomorphism
5. Increased nucleocytoplasmic ratio
6. Nuclear hyperchromatism
7. Increased mitotic activity.

The two most common examples of dysplastic changes are the uterine cervix and respiratory tract.

- Dysplastic changes often occur due to chronic irritation or prolonged inflammation.
- On removal of the inciting stimulus, the changes may disappear.
- In a proportion of cases, however, dysplasia progresses into carcinoma in situ (cancer confined to layers superficial to basement membrane) or invasive cancer.

Cellular Aging

- Old age is a concept of longevity in human beings.
- The consequences of aging appear after reproductive age.
- However, aging is distinct from mortality and disease although aged individuals are more vulnerable to disease.
- The average age of death of primitive man was barely 20-25 years compared to life-expectancy now which is approaching 80 years, survival being longer in women than men (3:2).
- About a century ago, the main causes of death were accidents and infections.
- But now with greater safety and sanitation, the mortality in the middle years has sufficiently declined.
- However, the maximum human lifespan has remained stable at about 110 years.
- Higher life expectancy in women is not due to difference in the response of somatic cells of the two sexes but higher mortality rate in men is attributed to violent causes and greater susceptibility to cardiovascular disease, cancer, cirrhosis and respiratory diseases, for which cigarette smoking and alcohols consumption are important contributory factors.

In general, the life expectancy of an individual depends upon the following factors :

1. Intrinsic genetic process i.e the genes controlling response to endogenous and exogenous factors initiating apoptosis in senility
2. Environmental factors e.g. consumption and inhalation of harmful substances, diet role of antioxidants etc.
3. Lifestyle of the individual such- as diseases due to alcoholism (e.g cirrhosis, hepatocellular carcinoma), smoking (e.g. bronchogenic carcinoma and other respiratory diseases), drug addiction.
4. Age-related diseases e.g. atherosclerosis and ischaemic heart disease, diabetes mellitus, hypertension, osteoporosis, Alzheimer's disease, Parkinson's disease etc.

Cellular Basis

- With age, structural and functional changes occur in different organs and systems of the human body.
- Although no definitive biologic basis of aging is established, most acceptable theory is the functional decline of non-dividing cells such as neurons and myocytes.

Organ Changes in Aging

- All organs start showing deterioration with aging.
- The following organs show evident morphologic and functional changes:

Cardiovascular system

- Atherosclerosis
- Arteriosclerosis with calcification
- Monkeberg's medial calcification
- Brown atrophy of heart
- Loss of elastic tissue from aorta and major arterial trunks causing their dilatation

Nervous system

- Atrophy of gyri and sulci
- Alzheimer's disease
- Parkinson's disease.

Musculoskeletal system

- Degenerative bone diseases,
- Frequent fractures due to loss of bone density.
- Age related muscular degeneration.

Eye

- Deterioration of vision due to cataract

- Vascular changes in retina

Hearing

- Disability in hearing due to senility is related to otosclerosis

Immune system

- Reduced IgG response to antigens, frequent and severe reflections

Skin

- Laxity of skin due to loss of elastic tissue.

Cancers

- 80% cancers occur in the age range of 50 and 80 years.

Inflammation

- The word inflammation means burning.
- This nomenclature had its origin in old times but now we know that burning is only one of the signs of inflammation.

Definition and Causes

- Inflammation is defined as the local response of living mammalian tissues to injury due to any agent
- It is a body defense reaction in order to eliminate or limit the spread of injurious agent as well as to remove the consequent necrosed cells and tissues.
- Inflammation is the response of tissues to injury or infection
- It is necessary for normal repair and healing.

The agents causing inflammation may be as under:

1. Physical agents like heat, cold, radiation, mechanical trauma.
2. Chemical agents like organic and inorganic poisons.
3. Infective agents like bacteria, viruses and their toxins.
4. Immunological agents like cell-mediated and antigen-antibody reactions.

- Inflammation is distinct from infection the former being a protective response by the body while the latter is invasion into the body by harmful microbes and their resultant ill-effects by toxins.
- Inflammation involves 2 basic processes with some overlapping, viz. early inflammatory response and later followed by healing.
- Though both these processes generally have protective role against injurious agents, inflammation and healing may cause considerable harm to the body as well e.g. anaphylaxis to bites by insects or reptiles, drugs, toxins, atherosclerosis, chronic rheumatoid arthritis, fibrous bands and adhesions in intestinal obstruction.

Signs of Inflammation

The Roman writer Celsus in 1st century AD named the famous 4 cardinal signs of inflammation as:

The classical external signs include :

- Heat (calor)
- Redness (rubor)
- Pain (dolor)
- Swelling (oedema)
- To these, fifth sign functio laesa (loss of function) was later added by Virchow.

Types of Inflammation

Depending upon the defence capacity of the host and duration of response, inflammation can be classified as acute and chronic.

Physiology and pathology of inflammation

Acute inflammation

- It is the result of rapid and complex interplay between the cells and soluble molecules of the innate immune system.
- Acute inflammation is the short duration and represents the early body reaction and is usually followed by repair.

The main features of acute inflammation are:

1. Accumulation of fluid and plasma at the affected site
2. Intravascular activation of platelets
3. Polymorphonuclear neutrophils as inflammatory cells

Chronic inflammation

- Chronic inflammation is of longer duration and occurs either after the causative agent of acute inflammation persists for a long time
- Certain causative factors induce chronic inflammation from the beginning.
- The characteristic feature of chronic inflammation is presence of chronic inflammatory cells such as lymphocytes, plasma cells and macrophages.

Acute Inflammation

The changes in acute inflammation can be conveniently described under the following 2 headings:

i. Vascular Events.
ii. Cellular Events.

Vascular Events

- Alteration in the microvasculature (arterioles, capillaries and venules) is the earliest response to tissue injury.

Alteration in the Microvasculature Include

- Haemodynamic changes
- Changes in vascular permeability.

Haemodynamic Changes

- The earliest features of inflammatory response result from changes in the vascular flow and calibre of small blood vessels in the injured tissue.
- The sequence of these changes is as under:

Transient Vasoconstriction of Arterioles

- Irrespective of the type of injury immediate vascular response is of transient vasoconstriction of arterioles.
- With mild form of injury the blood flow may be re-established in 3-5 seconds while with more severe injury the vasoconstriction may last for about 3 minutes.

Persistent Progressive Vasodilatation

- Next follows persistent progressive vasodilatation which involves mainly the arterioles, but to a lesser extent, affects other components of the microcirculation like venules and capillaries. This change is obvious within half an hour of injury.
- Vasodilatation results in increased blood volume in microvascular bed of the area, which is responsible for redness and warmth at the site of acute inflammation.

Elevated Local Hydrostatic Pressure

- Progressive vasodilatation, in turn, may elevate the local hydrostatic pressure resulting in transudation of fluid into the extracellular space. This is responsible for swelling at the local site of acute inflammation.

Slowing or Stasis of Microcirculation

- Slowing or stasis of microcirculation occurs next. Slowing is attributed to increased permeability of microvasculature that results in increased concentration of red cells, and thus, raised blood viscosity.

Emigration

- Stasis or slowing is followed by leucocytic margination or peripheral orientation of leucocytes (mainly neutrophils) along the vascular endothelium.
- The leucocytes stick to the vascular endothelium briefly, and then move and migrate through the gaps between the endothelial cells into the extravascular space. This process is known as emigration

Lewis Experiment

The features of haemodynamic changes in inflammation are best demonstrated by the Lewis experiment. Lewis induced the changes in the skin of inner aspect of forearm by firm stroking with a blunt point. The reaction so elicited is known as triple response or red line response consisting of the following :

i) Red line appears within a few seconds following stroking and results from local vasodilatation of capillaries and venules
ii) Flare is the bright reddish appearance or flush surrounding the red line and results

from vasodilatation of the adjacent arterioles.

iii) Wheal is the swelling or oedema of the surrounding skin occurring due to transudation of fluid into the extra vascular space.

These features thus elicit the classical signs of inflammation redness heat, swelling and pain.

II. Cellular Events

The cellular phase of inflammation consists of 2 processes:

- Exudation of Leucocytes
- Phagocytosis

Exudation of Leucocytes

- The escape of leucocytes from the lumen of microvasculature to the interstitial tissue is the most important feature of inflammatory response.
- In acute inflammation, polymorphonuclear neutrophils (PMNs) comprise the first line of body defense, followed later by monocytes and macrophages.

The changes leading to migration of leucocytes are as follows:

I. Changes in the Formed Elements of Blood

- In the early stage of inflammation, the rate of flow of blood is increased due to vasodilatation.
- But subsequently, there is slowing or stasis of bloodstream.
- With stasis, changes in the normal axial flow of blood in the microcirculation take place.
- The normal axial flow consists of central stream of cells comprised by leucocytes and RBCs and peripheral cell-free layer of plasma close to vessel wall

Margination

- Due to slowing and stasis, the central stream of cells widens and peripheral plasma zone becomes narrower because of loss of plasma by exudation. This phenomenon is known as margination.

Pavementing

- As a result of this redistribution, the neutrophils of the central column come close to the vessel wall and this process is known as pavementing

II. Rolling And Adhesion

- Peripherally marginated and pavement neutrophils slowly roll over the endothelial cells lining the vessel wall (rolling phase)
- This is followed by the transient bond between the leucocytes and endothelial cells becoming firmer (adhesion phase).

The following adhesion molecules bring about rolling and adhesion phases:

Selectins

- These mediate rolling of PMNs over endothelial surface.
- These consist of P-selectins (preformed and stored in endothelial cells and platelets), E-selectin (synthesised by cytokine-activated endothelial cells) and L-selectin (expressed on the surface of lymphocytes and neutrophils).

Integrins

- Integrins on the endothelial cell surface are activated during the process of loose and transient adhesions between endothelial cells and leucocytes.
- At the same time the receptors for integrins on the neutrophils are also stimulated. This process brings about firm adhesion between leucocyte and endothelium.

Immunoglobulin Superfamily

- Immunoglobulin superfamily adhesion molecule such as intercellular adhesion molecule (ICAM-1, 2) helps in localising leucocytes to the site of tissue injury and thus helps in transmigration of PMNs.

III. Emigration

- After sticking of neutrophils to endothelium, the former move along the endothelial surface till a suitable site between the endothelial cells is found where the neutrophils throw out cytoplasmic pseudopods

- Subsequently, the neutrophils lodged between the endothelial cells and basement membrane cross the basement membrane by damaging it locally with secreted collagenases and escape out into the extravascular space; this is known as emigration
- The damaged basement membrane is repaired almost immediately.
- Neutrophils are the dominant cells in acute inflammatory exudates in the first 24 hours
- Monocyte-macrophages appear in the next 24-48 hours
- Neutrophils are short lived (24-48 hours)
- Monocyte-macrophages survive much longer

Diapedesis

- Simultaneous to emigration of leucocytes, escape of red cells through gaps between the endothelial cells, diapedesis, takes place.
- It is a passive phenomenon RBCs being forced out either by raised hydrostatic pressure or may escape through the endothelial defects left after emigration of leucocytes.
- Diapedesis gives haemorrhagic appearance to the inflammatory exudate.

Chemotaxis

- The chemotactic factor-mediated transmigration of leucocytes after crossing several barriers (endothelium, basement membrane, peri-vascular myofibroblasts and matrix) to reach the interstitial tissues is called chemotaxis.
- The agents acting as potent chemotactic substances for different leucocytes called chemokines are as follows:

i) Leukotriene B_4 (LT-B_4)
ii) Platelet factor 4 (PF_4)
iii) Components of complement system (C3, C5 in particular)
iv) Cytokines (Interleukins IL-1, IL-5, IL-6)
v) Soluble bacterial products (such as formylated peptides)
vi) Monocyte chemoattractant protein (MCP-l)
vii) Chemotactic factor for CD4+T cells
viii) Eotaxin chemotactic for eosinophils.

Chemotactic agents also induce leucocyte activation that includes: the production of arachidonic acid metabolites, degranulation and secretion of lysosomal enzymes, generation of oxygen metabolites, increased intracellular calcium and increase in leucocyte surface adhesion molecules.

Phagocytosis

- It is defined as the process of engulfment of solid particulate material by the cells (cell-eating).
- The cells performing this function are called phagocytes.

There are 2 main types of phagocytic cells :

- Polymorphonuclear neutrophils (PMN_S) which appear early in acute inflammatory response, also called as microphages.
- Circulating monocytes and fixed tissue mononuclear phagocytes called as macrophages.

The process of phagocytosis is similar for both polymorphs and macrophages and involves the following 4 steps:

i. Recognition and Attachment Stage (Opsonisation)
ii. Engulfment Stage
iii. Secretion (Degranulation) Stage
iv. Digestion or Degradation Stage.

I. Recognition and Attachment Stage

- The phagocytic cells are recognised and attracted to bacteria by chemotatic factors released by bacterial products as well as by tissue proteins. In order to establish a bond between bacteria and the cell membrane of phagocytic cell, the micro-organisms get coated with opsonins

Opsonins

- These are naturally occurring factors in the serum.
- The main opsonins present in the serum and their corresponding receptors on the surface of phagocytic cells (PMNs or macrophages) are IgG opsonin, C3b opsonin and lectins.
- IgG opsonin is the Pc fragment of immunoglobulin C and it is the naturally occurring antibody in the serum that coats the bacteria while the PMNs possess receptors for the same.
- C3b opsonin is the fragment of complement; it is generated by activation of complement pathway. It is strongly chemotactic for attracting PMNs to bacteria.
- Lectins are carbohydrate-binding, proteins in the plasma which bind to bacterial cell wall.

II. Engulfment Stage

- The opsonised particle bound to the surface of phagocyte is ready to be engulfed. This is accomplished by formation of cytoplasmic pseudopods around the particle due to activation of actin filaments beneathe cell wall, enveloping it in a phagocytic vacuole
- Eventually, the plasma membrane enclosing the phagocytic vacuole breaks from the cell surface so that membrane lined phagocytic vacuole lies free in the cell cytoplasm
- The lysosomes of the cell fuse, with the phagocytic vacuole and form phagolysosome or phagosome

III. Degranulation Stage

- The preformed granule-stored products of PMNs are discharged or secreted into the phagosome and the extracellular environment.
- The specific or secondary granules of PMNs are discharged (e.g. lysosomes) while the azurophilic granules are fused with phagosomes.
- Mononuclear phagocytes synthesise and secrete certain enzymes (e.g. interleukin 2 and 6, TNF), arachidonic acid metabolites (e.g. prostaglandins, leukotrienes, platelet activating factor) and oxygen metabolites (e.g. superoxide oxygen, hydrogen peroxide, hypochlorous acid).

IV. Killing or Degradation Stage

- This stage represents the stage of killing and digestion of microorganism completing the role of phagocytes as scavanger cells.
- The micro-organisms after being killed by antibacterial substances are degraded by hydrolytic enzymes.
- This mechanism fails to kill and degrade some bacteria

  e.g. Tubercle bacilli.

Chemical Mediators of Inflammation

- Also called as permeability factors or endogenous mediators of increased vascular permeability, these are a large and increasing number of endogenous compounds which can enhance vascular permeability.
- However, currently many chemical mediators have been identified which partake in other processes of acute inflammation as well e.g. vasodilatation, chemotaxis, fever, pain and cause tissue damage.

The substances acting as chemical mediators of inflammation may be released from the cells, the plasma, or damaged tissue itself.

They are broadly classified into 2 groups:

i) Mediators released by cells; and

ii) Mediators originating from plasma.

Mechanism

- Damaged epithelial cells produce cytokines and antimicrobial peptides, causing early infiltration of phagocytic cells.
- As a result, there is production of

leukotrienes, prostaglandins, histamine, kinins, anaphylotoxins and inducible nitric oxide synthase within inflamed tissue.

- The effect is vasodilatation and increased local vascular permeability, which increases flow of fluid and cells to the affected tissue.
- In addition, pro-inflammatory cytokines produced at the site of injury have profound systemic effects.
- IL-1, TNF-a and IL-6 act on the hypothalamus to raise the temperature set-point, causing fever, and also stimulate the production of acute phase proteins by the liver.

Acute phase proteins

- Acute phase proteins are produced by the liver in response to inflammatory stimuli and have a wide range of activities.
- C-reactive protein (CRP) and serum amyloid A may be increased 1000-fold, contributing to host defence and stimulating repair and regeneration.
- Fibrinogen plays an essential role in wound healing
- a_1-antitrypsin and a_{1-}antichymotrypsin control the pro-inflammatory cascade by neutralising the enzymes produced by activated neutrophils, preventing widespread tissue destruction.
- In addition, antioxidants such as haptoglobin and manganese superoxide dismutase scavenge for oxygen free radicals, while increased levels of iron-binding proteins such as transferrin, ferritin and lactoferrin decrease the iron available for uptake by bacteria.

Immunoglobulins are not acute phase proteins but are often increased in chronic inflammation.

Resolution of inflammation

- Resolution of an inflammatory response is crucial for normal healing.
- This involves active down-modulation of inflammatory stimuli and repair of bystander damage to local tissues.
- Extravasated neutrophils undergo apoptosis and are phagocytosed by macrophages, along with the remains of microorganisms.
- Macrophages also synthesise collagenase and elastase, which break down local connective tissue and aid in the removal of debris.
- Macrophage-derived cytokines, including transforming growth factor (TGF)-b and platelet-derived growth factor, attract fibroblasts and promote the synthesis of new collagen, while angiogenic factors stimulate new vessel formation.

Sepsis and septic shock

- Septic shock is the clinical manifestation of overwhelming inflammation
- Failure of normal inhibitory mechanisms results in excessive production of pro-inflammatory cytokines by macrophages, causing hypotension, hypovolaemia, decreased perfusion and tissue oedema.
- In addition, uncontrolled neutrophil activation causes release of proteases and oxygen free radicals within blood vessels, damaging the vascular endothelium and further increasing capillary permeability.
- Direct activation of the coagulation pathway combines with endothelial cell disruption to form clots within the damaged vessels.

Clinical consequences

- It includes cardiovascular collapse, acute respiratory distress syndrome, disseminated intravascular coagulation, multi-organ failure and often death.
- Septic shock most frequently results from infection with Gram-negative bacteria, because lipopolysaccharide is particularly effective at activating the inflammatory cascade.

Factors Determining Variation in Inflammatory Response

- Although acute inflammation is typically characterised by vascular and cellular events with emigration of neutrophilic leucocytes, not all examples of acute inflammation show infiltration by neutrophils.

- On the other hand, some chronic inflammatory conditions are characterised by neutrophilic infiltration.
- For example, typhoid fever is an example of acute inflammatory process but the cellular response in it is lymphocytic
- Osteomyelitis is an example of chronic inflammation but the cellular response in this condition is mainly neutrophilic.

The Morphologic Variation in Inflammation

The morphologic variation in inflammation depends upon a number of factors and processes.

1. Factors Involving the Organisms

- **Type of Injury and Infection**

  For example,
- Skin reacts to herpes simplex infection by formation of vesicle
- Streptococcal infection by formation of boil
- Lung reacts to pneumococci by occurrence of lobar pneumonia
- Tubercle bacilli react by formation of granulomatous inflammation.
- **Virulence**

Many species and strains of organisms may have varying virulence e.g.

The three strains of Corynebacterium diphtheriae produce the same diphtherial exotoxin but in different amount.

- Corynebacterium diphtheriae gravis
- Corynebacterium diphtheriae intermedius
- Corynebacterium diphtheriae mills
- **Dose**

The concentration of organism in small doses produces usually local lesions while larger dose results in more severe spreading infections.

Portal of Entry

Some organisms are infective only if administered by particular route e.g. vibrio cholerae is not pathogenic if injected subcutaneously but causes cholera if swallowed.

Product of Organisms

Some organisms produce enzymes that help in spread of infections :

- Hyaluronidase by Clostridium welchii
- Streptokinase by Streptococci
- Staphylokinase and Coagulase by Staphylococci

2. Factors Involving the Host

- **General Health of Host :** For example, starvation, haemorrhagic shock, chronic debilitating diseases like diabetes mellitus, alcoholism etc render the host more susceptible to infections.
- **Immune State of Host :** Immunodeficiency helps in spread of infections rapidly e.g. in AIDS.
- **Leukopenia :** Patients with low WBC count with neutropenia or agranulocytosis develop spreading infection.

Site or Type of Tissue Involved

For example, the lung has loose texture as compared to bone and, thus, both tissues react differently to acute inflammation.

Local Host Factors

For instance, ischaemia, presence of foreign bodies and chemicals cause necrosis and are thus harmful.

3. Type of Exudation

The appearance of escaped plasma determines the morphologic type of inflammations.

Serous

- The fluid exudate resembles serum or is watery e.g. pleural effusion in tuberculosis, blister formation in bums.

Fibrinous

- The fibrin content is high in fluid exudates e.g. in pneumococcal and rheumatic pericarditis.

Purulent or Suppurative Exudate

- Exudates contain creamy pus: for example- inflection with pyogenic bacteria e.g. abscess, acute appendicitis.

Haemorrhagic

- Exudates contain vascular damage substance blood e.g. acute haemorrhagic pneumonia in influenza.

Catarrhal

- Exudates contain increased secretion of mucous due to the inflammation of surface epithelium e.g. common cold.

4. Cellular Proliferation

Variable cellular proliferation is seen in different types of inflammations.

- There is no significant cellular proliferation in acute bacterial infections except in typhoid fever in which there is intestinal lymphoid hyperplasia.
- Viral infections have the ability to stimulate cellular proliferation e.g. epidermal cell proliferation in herpes simplex, chickenpox and smallpox.
- In rapidly progressive glomerulonephritis, there is proliferation of glomerular capsular epithelial cells resulting in formation of 'crescents'
- In chronic inflammation, cellular proliferation of macrophages, fibroblasts and endothelial cells occurs.

5. Necrosis

The extent and type of necrosis in inflammation is variable

Gas Gangrene

- There is extensive necrosis with discoloured and foul smelling tissues.

Acute Appendicitis

- There is necrosis as a result of vascular obstruction

Chronic Inflammation

- In case of tuberculosis, there is characteristic caseous necrosis.

Morphology of Acute Inflammation

Inflammation of an organ is usually named by adding the suffix-itis to its Latin name

- Appendicitis
- Hepatitis
- Cholecystitis
- Meningitis etc.

A few morphologic varieties of acute inflammation are described below:

1. Pseudomembranous Inflammation
   - It is inflammatory response of mucous surface (oral, respiratory, bowel) to toxins of diphtheria or irritant gases.
2. Ulcer
   - Ulcers are local defects on the surface of an organ produced by inflammation.
   - Common sites for ulcerations Stomach Duodenum : Intestinal ulcers in typhoid fever, intestinal tuberculosis, bacillary and amoebic dysentery

Ulcers of legs due to varicose veins etc :

- In the acute stage, there is infiltration by polymorphs with vasodilatation while long-standing ulcers develop infiltration by lymphocytes, plasma cells and macrophages with associated fibroblastic proliferation and scarring.

3. Suppuration (Abscess Formation) :
   - When acute bacterial infection is accompanied by intense neutrophilic infiltrate in the inflamed tissue, it results in tissue necrosis.
   - A cavity is formed which is called an abscess and contains purulent exudate or pus
   - The process of abscess formation is known as suppuration.
   - The bacteria which cause suppuration are called pyogenic.
   - Microscopically, pus is creamy or opaque in appearance and is composed of numerous dead as well as living neutrophils, some red cells, fragments of tissue debris and fibrin.
   - In old pus, macrophages and cholesterol crystals are also present
   - An abscess may be discharged to the surface due to increased pressure inside or may require drainage by the surgeon.
   - Due to tissue destruction, resolution does not

occur but instead healing by fibrous scarring takes place.

Some of the common examples of abscess formation are as under:

- **Boil or Furruncle** : It is an acute inflammation via hair follicles in the dermal tissues.
- **Carbuncle** : It is seen in untreated diabetics and occurs as a loculated abscess in the dermis and soft tissues of the neck.

4. Cellulitis : It is a diffuse inflammation of soft tissues resulting from spreading effects of substances like hyaluronidase released by some bacteria.

Bacterial Infection of the blood

This includes the following 3 conditions:

- **Bacteraemia**
- It is defined as presence of small number of bacteria in the blood which do not multiply significantly.
- They are commonly not detected by direct microscopy.
- Blood culture is done for their detection e.g. infection with Salmonella typhi, Escherichia coli, Streptococcus viridans.
- **Septicaemia**
- It is defined as presence of rapidly multiplying, highly pathogenic bacteria in the blood e.g. pyogenic cocci, bacilli of plague etc.
- It is generally accompanied by systemic effects like toxaemia, multiple small haemorrhages, neutrophilic leucocytosis and disseminated intravascular coagulation (DIC).
- **Pyaemia**
- It is defined as the dissemination of small septic thrombi in the blood which cause their effects at the site where they are lodged.
- This can result in pyaemic abscesses or septic infarcts.
- **Pyaemic Abscesses**
- These are multiple small abscesses in various organs such as in cerebral cortex, myocardium, lungs and renal cortex, resulting from very small emboli fragmented from septic thrombus.
- **Septic Infarcts**
- These result from lodgement of larger fragments of septic thrombi in the arteries with relatively larger foci of necrosis, suppuration and acute inflammation e.g. septic infarcts of the lungs, Liver, brain, and kidneys from septic thrombi of leg veins or from acute bacterial endocarditis

Systemic Effects of Acute Inflammation

Acute inflammation is associated with systemic effects namely fever, leucocytosis and lymphangitis-lymphadenitis.

- **Fever**
- It occurs due to bacteraemia and it is thought to be mediated through release of factors like prostaglandins, interleukin-1 and tumour necrosis factor in response to infection.
- **Leucocytosis**
- It commonly accompanies the acute inflammatory reactions, usually in the range of 15,000- 20, 000/L.
- When the counts are higher than this with 'shift to left' of myeloid cells, the blood picture is described as Leukaemoid reaction.
- Usually, in bacterial infections there is neutrophilia
- In viral infections lymphocytosis
- In parasitic infestations, eosinophilia.
- Typhoid fever, an example of acute inflammation, however, induces Leucopenia with relative lymphocytosis.
- **Lymphangitis-Lymphadenitis**
- It is one of the important manifestations of localised inflammatory injury
- The lymphatics and lymph nodes that drain the inflamed tissue show reactive inflammatory changes in the form of lymphangitis and lymphadenitis.
- This response represents either a

nonspecific, reaction to mediators released from inflamed tissue or is an immunologic response to a foreign antigen. The affected lymph nodes may show hyperplasia of lymphoid follicles (follicular hyperplasia) and proliferation of mononuclear phagocytic cells in the sinuses of lymph node (sinus histiocytosis).

Shock

- It may occur in severe cases.
- Massive release of cytokine TNF-a, a mediator of inflammation, in response to severe tissue injury or infection results in profuse systemic vasodilatation, increased vascular permeability and intravascular volume loss.
- The net effect of these changes is hypotension and shock. Systemic activation of, coagulation pathway may occur leaÁling to microthrombi throughout the body and result in disseminated intravascular coagulation (DIC), bleeding and death.

Fate of Acute Inflammation

The acute inflammatory process can culminate in one of the following outcomes

1. Resolution
2. Healing by scarring
3. Suppuration
4. Progression to chronic inflammation

Resolution

- It means complete return to normal tissue following acute inflammation.
- This occurs when tissue changes are slight and the cellular changes are reversible e.g. resolution in lobar pneumonia.

Healing by Scarring

- This takes place when the tissue destruction in acute inflammation is extensive so that there is no tissue regeneration but actually there is healing by fibrosis.

Suppuration

- When the pyogenic bacteria causing acute inflammation result in severe tissue necrosis, the process progresses to suppuration.
- Initially, there is intense neutrophilic infiltration. Subsequently, mixture of neutrophils, bacteria, fragments of necrotic tissue, cell debris and fibrin comprise pus which is contained in a cavity to form an abscess.
- The abscess, if not drained, may get organised by dense fibrous tissue, and in time, get calcified.

Chronic Inflammation

- The acute inflammation may progress to chronic inflammation in which the processes of inflammation and healing proceed side by side.

Chronic inflammation

- In most instances, the development of an active immune response results in either clearance or control of the inflammatory stimulus with minimal local damage
- Failure of elimination may result in chronic inflammation.
- Persisting microorganisms stimulate the ongoing accumulation of neutrophils, macrophages and activated T lymphocytes.
- Chronic inflammation is defined as prolonged process in which tissue destruction and inflammation occur at the same time.

Causes

Chronic inflammation can be caused by one of the following 3 ways:

1. **Chronic Inflammation Following Acute Inflammation**
   - When the tissue destruction is extensive, or the bacteria survive and persist in small numbers at the site of acute inflammation e.g. in osteomyelitis, pneumonia terminating in lung abscess.
2. **Recurrent Attacks of Acute Inflammation**
   - When repeated bouts of acute inflammation

culminate in chronicity of the process e.g. in recurrent urinary tract infection leading to chronic pyelonephritis, repeated acute infection of gallbladder leading to chronic cholecystitis.

3. **Chronic Inflammation Starting De Novo**

- When the infection with organisms of low pathogenicity is chronic from the beginning e.g. infection with Mycobacterium tuberculosis.

General Features of Chronic Inflammation

Though there may be differences in chronic inflammatory response depending upon the tissue involved and causative organisms, there are some basic similarities amongst various types of chronic inflammation.

Following general features characterise any chronic inflammation:

1. Mononuclear Cell Inltration

- Chronic inflammatory lesions are infiltrated by mononuclear inflammatory cells like phagocyte and lymphoid cells.
- Phagocytes are represented by circulating monocytes, tissue macrophages, epithelioid cells and sometimes, multinucleated giant cells.
- The macrophages comprise the most important cells in chronic inflammation. These may appear at the site of chronic inflammation from:
  - Chemotactic factors and adhesion molecules for continued infiltration of macrophages
  - Local proliferation of macrophages
  - Longer survival of macrophages at the site of inflammation.
- The blood monocytes on reaching the extravascular space transform into tissue macrophages.
- Besides the role of macrophages in phagocytosis, they may get activated in response to stimuli such as cytokines (lymphokines) and bacterial endotoxins. On activation, macrophages release several biologically active substances e.g. acid and neutral proteases, oxygen-derived reactive metabolites and cytokines. These products bring about tissue destruction, neovascularisation and fibrosis.

High yield information

Other chronic inflammatory cells include lymphocytes, plasma cells, eosinophils and mast cells. In chronic inflammation, lymphocytes and macrophages influence each other and release mediators of inflammation.

2. Tissue Destruction or Necrosis

- Tissue destruction and necrosis is central feature of most forms of chronic inflammatory lesions.
- This is brought about by activated macrophages which release a variety of biologically active substances e.g. protease, elastase, collagenase, lipase, reactive oxygen radicals, cytokines (IL-1, IL-8, TNF), nitric oxide, angiogenesis growth factor etc.

3. Proliferative Changes

As a result of necrosis, proliferation of small blood vessels and fibroblasts is stimulated resulting in formation of inflammatory granulation tissue. Eventually, healing by fibrosis and collagen laying takes place.

Systemic Effects of chronic Inflammation

Chronic inflammation is associated with following systemic features :

1. Fever : Invariably there is mild fever, often with loss of weight and weakness.
2. Anaemia : Chronic inflammation is accompanied by anaemia of varying degree i.e. anaemia of chronic disease
3. Leucocytosis : Leucocytosis is generally associated with relative lymphocytosis in these cases.
4. ESR : It is elevated in all cases of chronic inflammation.

5. Amyloidosis.
6. Long-term cases of chronic suppurative inflammation may develop secondary systemic (AA) amyloidosis.

Types of Chronic Inflammation

Conventionally, chronic inflammation is subdivided into 2 types:

1. **Non-Specific Chronic Inflammation**
   - When the irritant substance produces a non-specific chronic inflammatory reaction leading to formation of granulation tissue and healing by fibrosis

     e.g. chronic osteomyelitis, chronic ulcer.
2. **Specific Chronic Inflammation**
   - When the injurious agent causes a characteristic histologic tissue response e.g. tuberculosis, leprosy, syphilis.

Histological features are used for more descriptive classification of chronic inflammation into 2 corresponding types:

1. **Chronic Non-Specific Inflammation**
   - It is characterised by non-specific inflammatory cell infiltration e.g. chronic osteomyelitis, lung abscess.
   - A variant of this type of chronic inflammatory response is chronic suppurative-inflammation in which infiltration by polymorphs and abscess formation are additional features e.g. actinomycosis.
2. **Chronic Granulomatous Inflammation**
   - It is characterised by formation of granulomas e.g. tuberculosis, leprosy, syphilis, actinomycosis, sarcoidosis etc.

Granulomatous Inflammation

- Granuloma is defined as a circumscribed, tiny lesion, about 1 mm in diameter, composed predominantly of collection of modified macrophages called epithelioid cells, and rimmed at the periphery by lymphoid cells.
- The word 'granuloma' is derived from granule meaning circumscribed granule-like lesion, and -oma which is a suffix commonly used for true tumours but here indicates inflammatory mass or collection of macrophages.
- Epithelioid cells, so called because of their epithelial cell-like appearance, are modified macrophages/ histiocytes which are somewhat elongated, having pale-staining abundant cytoplasm. vesicular and lightly-staining slipper-shaped nucleus, while the cell membrane of adjacent epithelioid cells is closely apposed due to hazy cell outline. Epithelioid cells are weakly phagocytic.
- If this is associated with local deposition of fibrous connective tissue, a granuloma may form.
- Granulomas are characteristic of infection such as tuberculosis and leprosy, in which the microorganism is protected by a robust cell wall which shields it from killing, despite phagocytosis.
- Inappropriately vigorous or prolonged immune responses may cause significant bystander tissue damage. These are known as hypersensitivity responses and may involve either antibody- or cell-mediated responses.
- Besides the presence of epithelioid cells and lymphoid cells; granulomas may have giant cells, necrosis and fibrosis.

Examples of Granulomatous Inflammation

- Granulomatous inflammation is typical of reaction to poorly digestible agents elicited by tuberculosis, leprosy, fungal infections, schistosomiasis, foreign particles etc.
- A comprehensive list of important examples of granulomatous conditions, their etiologic agents and salient features.

Conditions commonly associated with abnormal CRP and or ESR

Condition	Consequence	Effect on CRP	Effect on ESR
Acute bacterial, fungal or viral infection	Stimulates acute phase response	Increased (range 50-150 mg/L; in severe infections may be > 300 mg/L)	Increased
Necrotising bacterial infection	Stimulates profound acute inflammatory response	Increased +++ (may be > 300 mg/L)	Increased
Chronic bacterial or fungal infection, e.g. localised abscess, bacterial endocarditis or tuberculosis	Stimulates acute and chronic inflammatory response with polyclonal increase in immunoglobulins as well as, increased acute phase proteins	Increased (range 50-150 mg/L)	Increase Disproportionate to CRP
Acute inflammatory diseases, e.g. Crohn's disease, polymyalgia rheumatica	Stimulates acute phase response	Increased (range 50-150mg/L)	Increased
SLE, Sjogren's syndrome	Chronic inflammatory response	Normal (paradoxically)	Increased
Multiple myeloma	Monoclonal increase in serum immunoglobulin without acute inflammation	Normal	Increased
Pregnancy, old age, end-stage renal disease	Increased fibrinogen	Normal	Moderately increased

Difference between Acute Inflammation and Chronic Inflammation:

Character	Acute Inflammation	Chronic Inflammation
Initiation	Fast: in minutes or hour	Slow: in Days
Cellular infiltrate	Neutrophils	Lymphocytes, Plasma cells, Macrophages, Eosinophils, Mast Cell
Tissue reaction	Mild and self-limited	Severe and progressive
Signs of inflammation	Prominent	Less
Chemical Mediators	IL-1, IL-6, IL-17, Chemokines	IL-12, IL-17, INF-α
Pattern of Inflammation	Serous, Fibrinous, Abscess (Purulent/Suppurative), Ulcer	Granulomatous inflammation-Foreign body Granuloma, Immune Granuloma
Outcome	• Complete resolution • Scarring or fibrosis • Progression to chronic inflammation	• Complete resolution • Persistence of inflammation

Edema

- Claude Bernarde (1949) first coined the term internal environment or *milieuinterieur* for the state in the body in which the interstitial fluid that bathes the cells and the plasma, together maintain the normal morphology and function of the cells and tissues of the body.
- The mechanism by which the constancy of the internal environment is maintained and ensured is called the homeostasis.
- For this purpose, living membranes with varying permeabilities such as vascular endothelium and the cell wall play important role in exchange of fluids, electrolytes, nutrients and metabolites across the compartments of body fluids.
- The normal composition of internal environment consists of the following components

Water

- It is the principal and essential constituent of the body.
- The total body water in a normal adult male comprises 50-70% (average 60%) of the body weight and about 10% less in a normal adult female (average 50%).
- Thus, the body of a normal man weighing 65 kg contains approximately 40 Litres of water.
- The total body water (assuming average of 60%) is distributed into 2 main compartments of body fluids separated from each other by membranes freely permeable to water.

Body Fluid Compartments

Intracellular Fluid Compartment :

- This comprises about 33% of the body weight the bulk of which is contained in the muscles.

Extracellular Fluid Compartment

- This constitutes the remaining 27% of body weight containing water.

  The 4 subdivisions of extracellular fluid (ECF) are:
- Interstitial fluid including lymph fluid constitutes the major proportion of ECF (12% of body weight).
- Intravascular fluid or blood plasma comprises about 5% of the body weight. Thus plasma content is about 3 Litres of fluid out of 5 litres of total blood volume.
- Mesenchymal tissues such as dense connective tissue, cartilage and bone contain body water that comprises about 9% of the body weight.
- Transcellular fluid constitutes 1% of body weight. This is the fluid contained in the secretions of secretory cells of the body e.g. skin, salivary glands, mucous membranes of alimentary and respiratory tracts, pancreas, liver and biliary tract: kidneys, gonads, thyroid, lacrimal gland and CSF.

Normal Fluid Exchanges

- The fluid exchanges between the body compartments take place in coordinated manner to maintain the homeostasis.

At the Arteriolar end of the Capillary

- The balance between the hydrostatic pressure (32 mmHg) and plasma oncotic pressure (25 mmHg) is the hydrostatic pressure of 7 mmHg which is the outward-driving force so that a small quantity of fluid and solutes leave the vessel to enter the interstitial space.

At the venular end of the capillary

- The balance between the hydrostatic pressure (12 mm Hg) and plasma oncotic pressure (25 mm Hg) is the oncotic pressure of 13 mm Hg which is the inward-driving force so that the fluid and solutes re-enter the plasma.

The tissue fluid

- It left after exchanges across the capillary wall escapes into the lymphatics from where it is finally drained into venous circulation.

Tissue factors

- The oncotic pressure of interstitial fluid and tissue tension, are normally small and insignificant forces opposing the plasma hydrostatic pressure and capillary hydrostatic pressure, respectively.

Disturbances of body fluids and electrolytes

The common derangements of body fluid are as follows:

1. Edema
2. Overhydration
3. Dehydration or pure water deficiency.

Edema

Definition The Greek word oidema means swelling.

- Edema may be defined as abnormal and excessive accumulation of fluid in the interstitial tissue spaces and serous cavities.
- The presence of abnormal collection of fluid within the cell is sometimes called intracellular edema but should more appropriately be called hydropic degeneration.
- The accumulation of fluid in the body cavities causes many conditions
- The accumulation of fluid in the peritoneal cavity is known as ascites
- The accumulation of fluid in the pleural cavity is known as hydrothorax or pleural effusion
- The accumulation of fluid in the pericardial cavity is known as hydropericardium or pericardial effusion.

Types of Edema

The edema may be of 2 main types:

1. Localised in the organ or limb; and
2. Generalised (Anasarca or dropsy)

- The edema fluid lies free in the interstitial space between the cells and can be displaced from one place to another.

Pitting Edema

- In the case of edema in the subcutaneous tissues, momentary pressure of finger produces a depression known as pitting edema.

Non-Pitting or Solid Edema

- The other variety is non-pitting or solid edema in which no pitting is produced on pressure e.g. in myxedema, elephantiasis.

Transudate

- It is observed in cardiac and renal disease

Exudate

- It is observed in inflammatory edema.
- The differences between transudate and exudates are tabulated in Table.

Table : Differences between transudate and exudate

No.	Features	Transudate	Exudate
1.	Definition	Filtrate of blood plasma without changes in endothelial permeability	Edema of inflamed tissue associated with increased vascular permeability
2.	Character	Non-inflammatory edema	Inflammatory edema
3.	Protein content	Low (< 1 gm/dl); mainly albumin, low fibrinogen, hence no tendency to coagulate	High (2.5-3.5 gm/dl); readily coagulates due to high content of fibrinogen and other coagulation factors
4.	Glucose content	Same as in plasma	Less than plasma (<60 mg/dl)
5.	Specific gravity	Low (< 1.012)	High (> 1.018)
6.	pH	>7.3	<7.3
7.	LDH	Low	High
8.	Effusion LDH/ Serum LDH ratio	<0.6	>0.6
9.	Cells	Few cells; mainly meso-thelial cells and cellular debris	Many cells inflammatory as well as parenchymal
10.	Example	Edema in congestive cardiac failure	Purulent exudate such as pus

Pathogenesis of Edema

- Edema is caused by mechanisms that interfere with normal fluid balance of plasma, interstitial fluid and lymph flow.

The following six mechanisms may be operating singly or in combination to produce edema :

I. Decreased plasma oncotic pressure
II. Increased capillary hydrostatic pressure
III. Lymphatic obstruction
IV. Tissue factors (increased oncotic pressure of interstitial fluid, and decreased tissue tension)
V. Increased capillary permeability
VI. Sodium and water retention.

I. Decreased Plasma Oncotic Pressure

- The plasma oncotic pressure exerted by the total amount of plasma proteins tends to draw fluid into the vessels normally.
- A fall in the total plasma protein level (hypoproteinemia of less than 5 g/dl) results in lowering of plasma oncotic pressure in a way that it can no longer counteract the effect of hydrostatic pressure of blood.
- This results in increased outward movement of fluid from the capillary wall and decreased inward movement of fluid from the interstitial space causing edema
- Hypoproteinemia usually produces generalised edema (anasarca).
- Out of the various plasma proteins, albumin has four times higher plasma oncotic pressure than globulin so that it is hypoalbuminemia (albumin below 2.5 g/dl) that results in edema more often.

The examples of edema

i) Edema of renal disease e.g. in nephrotic syndrome, acute glomerulonephritis.
ii) Ascites of liver disease e.g. in cirrhosis.
iii) Edema due to other causes of hypoproteinemia e.g. in protein-losing enteropathy.

II. Increased Capillary Hydrostatic Pressure

- The hydrostatic pressure of the capillary is the force that normally tends to drive fluid through the capillary wall into the interstitial space by counteracting the force of plasma oncotic pressure.
- A rise in the hydrostatic pressure at the, venular end of the capillary which is normally low (average 12 mmHg) to a level more than the plasma oncotic pressure results in minimal or no reabsorption of fluid at the venular end, consequently leading to edema

The examples of edema by this mechanism are seen in the following disorders:

i) Edema of cardiac disease e.g. in congestive cardiac failure, constrictive pericarditis.
ii) Ascites of liver disease e.g. in cirrhosis of liver
iii) Passive congestion e.g. in mechanical obstruction due to thrombosis of veins of the lower legs, varicosities, pressure by pregnant uterus, tumours etc.
iv) Postural edema e.g. transient edema of feet and ankles due to increased venous pressure seen in individuals who remain standing erect for long time such as traffic constables.

III. Lymphatic Obstruction

Normally the interstitial fluid in the tissue spaces escapes by way of lymphatics so that obstruction to outflow of these channels causes localised edema, known as lymphedema

The examples of lymphedema :

i) Removal of axillary lymph nodes in radical mastectomy for carcinoma of the breast produces lymphedema of the affected arm.
ii) Pressure from outside on the main abdominal or thoracic duct such as due to tumours, effusions in serous cavities etc may produce lymphedema. At times, the main lymphatic channel may rupture and discharge chyle into the pleural cavity (chylothorax) or into peritoneal cavity (chylous ascites).
iii) Inflammation of the lymphatics as seen in filariasis (infection with Wuchereria bancrofti) results in chronic lymphedema of scrotum and legs known as elephantiasis.
iv) Occlusion of lymphatic channels by malignant cells may result in lymphedema.

v) Milroy's disease or hereditary lymphedema is due to abnormal development of lymphatic channels. It is seen in families and the edema is mainly confined to one or both the lower limbs.

IV. Tissue Factors

The forces acting in the interstitial space-oncotic pressure of the interstitial space and tissue tension, are normally quite small and insignificant to counteract the effects of plasma oncotic pressure and capillary hydrostatic pressure, respectively.

However, in some situations, the tissue factors in combination with other mechanisms play a role in causation of edema

Elevation of oncotic pressure of interstitial fluid as occurs due to increased vascular permeability and inadequate removal of proteins by lymphatics.

Lowered tissue tension as seen in loose subcutaneous tissues of eyelids and external genitalia.

V. Increased Capillary Permeability.

Capillary poisons such as toxins and their products, histamine, anoxia, venoms, certain drugs and chemicals causes injury to capillary endothelium.As a result, the capillary permeability to plasma proteins is enhanced due to development of gaps between the endothelial cells. This, in turn, causes reduced plasma oncotic pressure, which consequently produces edema.

The examples of edema by this mechanism :

- Generalised edema due to increased vascular permeability may occur in systemic infections, poisonings, certain drugs and chemicals, anaphylactic reactions and anoxia.
- Localised edema such as : Inflammatory edema as seen in infections, allergic reactions, insect-bite, irritant drugs and chemicals. It is generally exudate in nature.
- Angioneurotic edema is an acute attack of localised edema occurring on the skin of face and trunk and may involve lips, larynx, pharynx and lungs. It is possibly neurogenic or allergic in origin.

VII. Sodium and Water Retention

Intrinsic Renal Mechanism

- It is activated in response to sudden reduction in the effective arterial blood volume (hypovolemia) as occurs in severe hemorrrhage.
- As a result of this, renal ischemia occurs which causes reduction in the glomerular filtration rate, decreased excretion of sodium in the urine and consequent retention of sodium.

Extra-Renal Mechanism

- It involves the secretion of aldosterone, a sodium retaining hormone, by the renin-angiotensin-aldosterone system.
- Aldosterone increases sodium reabsorption in the renal tubules and sometimes causes a rise in the blood pressure.

ADH Mechanism

- Retention of sodium leads to retention of water secondarily under the influence of anti diuretic hormone (ADH) or vasopressin. Large amounts of ADH produce highly concentrated urine.
- Excessive retention of sodium and water and their decreased renal excretion occur in response to hypovolemia and lowered concentration of sodium in the renal tubules via stimulation of intrinsic renal and extra-renal mechanisms as well as via release of ADH

The examples of edema by this mechanism are :

i) Edema of cardiac disease e.g. in congestive cardiac failure.

ii) Ascites of liver disease e.g. in cirrhosis of liver.

iii) Edema of renal disease e.g. in nephrotic syndrome, glomerulonephritis.

Over Hydration

Over hydration is the state of pure water excess or water intoxication.

Causes

- Acute and chronic renal disease

- Severe congestive heart failure
- Addison's disease
- Cirrhosis of the liver
- Tumours producing ADH e.g. bronchogenic carcinoma
- Early postoperative period when patient is on infusion of glucose solution but is incapable of diluting the urine due to liberation of vasopressin (ADH) by the stress of surgery

Pathogenesis

- A normal healthy individual can consume large volumes of water and respond via water diuresis without producing any deleterious effects.
- This is because the normal individual has the capacity to excrete large volumes of dilute urine when excess of water is given without electrolytes.
- However, in certain conditions, the kidneys have a restricted ability to dilute the urine when large amounts of pure water are given.
- This results in expansion of extracellular fluid compartment with reduced osmolality and intracellular edema.
- An early diuretic phase is followed by oliguria or even anuria due to damaged renal tubular epithelial cells.

Clinical and Biochemical Effects

- Headache
- Confusion
- In severe cases convulsion, coma, and even death.
- Plasma changes include reduced plasma electrolytes with decreased osmolality lowered plasma proteins and reduced PCV.

Dehydration

- Dehydration or pure water deficiency is a state of deprivation of water without corresponding loss of electrolytes.

Pathogenesis

- Decrease of body water initially affects intravascular compartment so that the blood volume is reduced.
- This is followed by withdrawing of fluid from the interstitial compartment with consequent hyperosmolality
- This leads to shifting of intracellular water to the extracellular compartment which results in cellular dehydration as well as depletion of potassium ions from the cells.
- Release of ADH secretion in response to hypovolemia results in reduced renal excretion of water.
- Sodium excretion is initially normal but later the renin-angiotensin-aldosterone mechanism is stimulated so that sodium is retained and its excretion decreases.
- Thus, this type of dehydration is characterised by water and potassium loss.

Causes

- Pure water deficiency is less common than salt depletion but can occur in the following conditions:

1. Deficient water intake e.g. in dysphagia, obstructive lesion in oesophagus, starvation, intense weakness, coma.
2. Excessive loss of water e.g. in diabetes insipidus, hyperparathyroidism, pyrexia, hyper apnoea.

Clinical and Biochemical Effects

- Intense thirst
- Mental confusion
- Fever
- Oliguria
- Plasma changes

In early stage, the levels of sodium, plasma proteins and PCV are unaltered but in late stage, there is rise in blood urea, serum sodium and PCV.

Disturbances of Electrolytes

Changes in the concentration of sodium, potassium, chloride, bicarbonate, water and blood pH are observed.

Combined Sodium and Water Deficiency

- Combined sodium and water deficiency is more common than deficiency of either component separately.

- It is commonly called salt depletion because both sodium and chloride are lost equally.

Pathogenesis

- Combined loss of water and sodium leads to fall in the volume of intravascular fluid first, and then reduction in extracellular fluid.
- Initially, there is no fall in the sodium level. But later, in response to ADH secretion, water is retained and sodium level falls.
- Thus, this type of dehydration is characterised by severe water and sodium loss.

Causes

Loss of sodium and water can occur in the following conditions:

1. Gastrointestinal disorders e.g. severe vomiting, diarrhoea.
2. Excess loss via the sweat.
3. Excess loss via urine e.g. in patients of heart failure on diuretics, Addison's disease, advanced diabetes mellitus.
4. Excess loss via blood and plasma e.g. in severe hemorrrhage, extensive burns.

Clinicai and Biochemical Effects

These are :

- Clinical effects are signs and symptoms of dehydration such as sunken eyeballs, wrinkled skin, dry tongue, muscle cramps, oliguria.
- Plasma changes- There is reduced level of plasma sodium, and raised levels of plasma proteins, PCV and blood urea.

Hemodynamic Disturbances

There are three main basic requirements for normal circulatory function: normal anatomic features, normal physiologic controls, and normal biochemical composition of the blood. These are essential to maintain normal blood flow and perfusion of tissues.

Derangements of blood flow or hemodynamic disturbances are considered under two broad headings:

1. Disturbances in the volume of the circulating blood. These include: hyperemia and congestion, hemorrrhage and shock,
2. Circulatory disturbances of obstructive nature. These are: thrombosis, embolism, ischemia and infarction.

Disturbances in the Volume of Circulating Blood Hyperemia and Congestion:

- Hyperemia and congestion are the terms used for increased volume of blood within dilated vessels of an organ or tissue, the increased volume from arterial and arteriolar dilatation being referred to as hyperemia or active hyperemia, whereas the impaired venous drainage is called venous congestion or passive hyperemia.
- If the condition develops rapidly it is called acute, while more prolonged and gradual response is known as chronic.

Active Hyperemia

The dilatation of arteries, arterioles and capillaries is effected either through sympathetic neurogenic mechanism or via the release of vasoactive substances. The affected tissue or organ is pink or red in appearance (erythema).

The examples of active hyperemia are seen in the following conditions :

- Inflammation e.g. congested vessels in the walls of alveoli in pneumonia.
- Blushing i.e. flushing of the skin of face in response to emotions.
- Menopausal flush.
- Muscular exercise.
- High grade fever.

Passive Hyperemia (Venous Congestion)

- The dilatation of veins and capillaries due to impaired venous drainage results in passive hyperemia or venous congestion commonly referred to as congestion.
- Congestion may be acute or chronic, the latter being more common and called chronic venous congestion (CVC).
- The affected tissue or organ is bluish in colour

due to accumulation of venous blood (cyanosis).

- Obstruction to the venous outflow may be local or systemic.

Venous Congestion is of 2 Types :

1. Local Venous Congestion: It results from obstruction to the venous outflow from an organ or part of the body e.g. portal venous obstruction in cirrhosis of the liver, outside pressure on the vessel wall as occurs in tight bandage, plasters, tumours, pregnancy, hernia etc, or intraluminal occlusion by thrombosis.
2. Systemic (General) Venous Congestion : It is engorgement of systemic veins e.g. in left-sided and right-sided heart failure and diseases of the lungs which interfere with pulmonary blood flow like pulmonary fibrosis, emphysema etc.
3. Usually the fluid accumulates upstream to the specific chamber of the heart which is initially affected.
4. For example; in left-sided heart failure (such as due to mechanical overload in aortic stenosis, or due to weakened left ventricular wall as in myocardial infarction) pulmonary congestion results, whereas in right-sided heart failure (such as due to pulmonary stenosis or pulmonary hypertension) system

Hemorrrhage

- Hemorrrhage is the escape of blood from a blood vessel.
- The bleeding may occur externally or internally into the serous cavities (e.g. hemothorax, hemoperitoneum, hemopericardium) or into a hollow viscus.

Hematoma

- Extravasation of blood into the tissues with resultant swelling is known as hematoma

Ecchymoses

- Large extravasation of blood into the skin and mucous membranes is known as ecchymoses.

Purpuras

- These are small areas of hemorrhages (up to 1 cm) into the skin and mucous membrane.

Petechiae

- These are minute pinhead-sized hemorrrhages.

Microscopic escape of erythrocytes into loose tissues may occur following marked congestion and is known as diapedesis.

Causes of Hemorrrhage

The blood loss may be large and sudden (acute), or -small repeated bleeds may occur over a period of time (chronic).

1. Trauma to the vessel wall e.g. penetrating wound in the heart or great vessels, during labour etc.
2. Spontaneous hemorrrhage e.g. rupture of an aneurysm, septicemia, bleeding diathesis (such as purpura), acute leukemias, pernicious anemia, scurvy.
3. Inflammatory lesions of the vessel wall e.g. bleeding from chronic peptic ulcer, typhoid ulcers, blood vessels traversing a tuberculous cavity in the lung, syphilitic involvement of the aorta, polyarteritis nodosa.
4. Neoplastic invasion e.g. hemorrrhage following vascular invasion in carcinoma of the tongue.
5. Vascular diseases e.g. atherosclerosis.
6. Elevated pressure within the vessels e.g. cerebral and retinal hemorrrhage in systemic hypertension, severe hemorrrhage from varicose veins due to high pressure in the veins of legs or oesophagus.

Effects of Hemorrhace

The effects of blood loss depend upon 3 main factors:

- The amount of blood loss
- The speed of blood loss
- The site of the hemorrrhage

Effects

- The loss up to 20% of blood volume suddenly or slowly generally has little clinical effects because of compensatory mechanisms.
- A sudden loss of 33% of blood volume may cause death

- Loss of upto 50% of blood volume over a period of 24 hours may not be necessarily fatal.
- Chronic blood loss generally produces an iron deficiency anemia
- Acute hemorrrhage may lead to serious immediate consequences such as hypovolemic shock.

Shock

Definition and Types :

- Shock is defined as a clinical state of cardiovascular collapse characterised by: an acute reduction of effective circulating blood volume; and an inadequate perfusion of cells and tissues.
- The end result is hypotension and cellular hypoxia and, if uncompensated, may lead to impaired cellular metabolism and death.

Shock is classified into 2 Types:

1. Primary (initial) shock
2. Secondary (true) shock

Primary or Initial Shock

- It is transient and usually a benign vasovagal attack resulting from sudden reduction of venous return to the heart caused by neurogenic vasodilatation and consequent peripheral pooling of blood.
- It can occur immediately following trauma, severe pain or emotional overreaction such as due to fear, sorrow or surprise.
- Clinically, the patient generally develops unconsciousness, weakness, sinking sensation, pale and clamsriy limbs, weak and rapid pulse, and low blood pressure.

  The attack usually lasts for a few seconds or minutes.

Secondary or True Shock

- It occurs due to hemodynamic derangements with hypo perfusion of the cells.
- This type of shock is the true shock which is commonly referred to 'shock' if not specified and is the type described below

Etiology and Classification

- Many types of injuries and diseases can cause shock.
- Causes may be broadly grouped under 3 major headings, and accordingly shock is classified into 3 main etiologic forms

1. Hypovolemic shock
2. Cardiogenic shock
3. Septic shock

Hypovolemic Shock

- Reduction in blood volume induces hypovolemic shock.
- The causes of hypovolemia include the following:
- Severe huemorthage (external or internal) e.g.
- Trauma, surgery.
- Fluid loss e.g. in severe burns, crush injury to a limb, persistent vomiting and severe diarrhoea causing dehydration.

Septic Shock

- Severe bacterial infections or septicemia induce septic shock.
- The predominant causes:
- Gram-negative septicemia (endotoxic shock) e.g. infection with E.coli, Proteus, Klebsiella; Pseudomonas and bacteroides.
- Endotoxins of gram-negative bacilli have been implicated as the most important mediator of septic shock.
- Gram-positive septicemia (exotoxic shock) is less common e.g. infection with streptococci, pneumococci.

Cardiogenic Shock

- Acute circulatory failure with sudden fall in cardiac output from acute diseases of the heart without actual reduction of blood volume (normovolemia) results in cardiogenic shock.
- The causes include the following :

  Deficient emptying of blood from heart e.g.
- Myocardial infarction
- Rupture of the heart
- Cardiac arrhythmias

Deficient filling of blood in the heart e.g :

- Cardiac tamponade from hemopericardium

Obstruction to the outflow e.g. :

- Pulmonary embolism
- Ball valve thrombus.

Other Types of Shock

- Neurogenic shock (following anaesthesia or spinal cord injury)
- Anaphylactic shock

These are the two other types of shock resulting from peripheral vasodilation with pooling of blood.

Pathogenesis

There are 2 basic features in the pathogenesis of shock:

- Reduced effective circulating blood volume; and
- Reduced supply of oxygen to the cells and tissues with resultant anoxia.

  Circulatory Disturbances of Obstructive Nature

Thrombosis

Definition and Effects :

- Thrombosis is defined as the process of formation of solid mass in circulation from the constituents of flowing blood; the mass itself is called a thrombus.
- A blood clot is the mass of coagulated blood formed in vitro e.g. in a test tube.
- Hematoma is the extravascular accumulation of blood clot e.g. into the tissues.
- Hemostatic plugs are the blood clots formed in healthy individuals at the site of bleeding e.g. in injury to the blood vessel.
- In other words, hemostatic plug at the cut end of a blood vessel may be considered the simplest form of thrombosis.
- Hemostatic plugs are useful as they stop the escape of blood and plasma, whereas thrombi developing in the unruptured cardiovascular system may be life threatening by causing one of the following harmful effects:

1. **Ischemic injury** : Thrombi may decrease or stop the blood supply to part of an organ or tissue and cause ischemia which may subsequently result in infarction.
2. **Thromboembolism** : The thrombus or its part may get dislodged and be carried along in the bloodstream as embolus to lodge in a distant vessel.

Pathophysiology

- Since the protective hemostatic plug formed as a result of normal hemostasis is an example of thrombosis
- Human beings possess inbuilt system by which the blood remains in Fluid state normally and guards against the hazards of thrombosis and hemorrrhage.
- However, injury to the blood vessel initiates hemostatic repair mechanism or thrombogenesis.
- Virchow described three primary events which predispose to thrombus formation (Virchow's triad): endothelial injury, alteration in flow of blood, and hypercoagulability of blood.

1. **Role of Blood Vessel Wall :** The integrity of blood vessel wall is important for maintaining normal blood flow.
2. **Role of Platelets :** Following endothelial cell injury, platelets come to play a central role in normal hemostasis as well as in thrombosis.
3. **Role of Coagulation System :** Coagulation mechanism is the conversion of the plasma fibrinogen into solid mass of fibrin.

   The coagulation system is involved in both hemostatic process and thrombus formation.
4. **Hypercoagulability of Blood :** The occurrence of thrombosis in some conditions such as in nephrotic syndrome, advanced cancers, extensive trauma, burns and during puerperium is explained on the basis of hypercoagulability of blood. The effect of hypercoagulability on thrombosis is favoured by advancing age, smoking, use of oral contraceptives and obesity.
5. **Alteration of Blood Flow :** Formation of

arterial and cardiac thrombi is facilitated by turbulence in the blood flow, while stasis initiates the venous thrombi even without evidence of endothelial injury.

Morphology of Various Types

Thrombosis may occur in the heart, arteries, veins and the capillaries. Beside the differences in mechanisms of thrombus formation at these sites, the clinical effects of these are even more different.

Arterial thrombi produce ischemia and infarction, whereas cardiac and venous thrombi cause embolism.

Venous Thrombi

- i) Veins of lower limbs: deep veins of legs, varicose veins.
- ii) Popliteal, femoral and iliac veins: postoperative stage, postpartum.
- iii) Pulmonary veins: CHF, pulmonary hypertension.
- iv) Hepatic and portal vein: portal hypertension.
- v) Superior vena cava: infections in head and neck
- vi) Inferior vena cava: extension of thrombus from hepatic vein.
- vii) Mesenteric veins: volvulus, intestinal obstruction.
- viii) Renal vein: renal amyloidosis.

Distinguishing features between thrombi formed in rapidly-flowing arterial circulation and slow-moving venous blood.

Capillary Thrombi

Minute thrombi composed mainly of packed red cells are formed in the capillaries in acute inflammatory lesions, vasculitis and in disseminated intravascular coagulation (DIC).

Fate of Thrombosis

The possible fate of thrombosis :

1. Resolution
2. Organisation
3. Propagation
4. Thromboembolism

Factors Predisposing to Thrombosis

A number of primary (genetic) and secondary (acquired) factors favour thrombosis.

Primary (Genetic) factors

- i) Deficiency of antithrombin
- ii) Deficiency of protein C or S
- iii) Defects in fibrinolysis
- iv) Mutation in factor V

Secondary (acquired) factors

A. Risk factors :

- i) Advanced age
- ii) Prolonged bed-rest
- iii) Immobilisation
- iv) Use of oral contraceptives
- v) Cigarette smoking
- vi) Tissue damage e.g. trauma, fractures, burns

B. Clinical conditions predisposing to thrombosis:

- i) Heart diseases e.g. myocardial infarction, CHF, rheumatic mitral stenosis, cardiomyopathy.
- ii) Atherosclerosis
- iii) Aneurysms of the aorta and other vessels
- iv) Varicosities of leg veins
- v) Nephrotic syndrome
- vi) Disseminated cancers
- vii) Late pregnancy and puerperium.

Clinical Effects of Thrombosis

These depend upon the site of thrombi, rapidity of formation, and nature of thrombi.

1. **Cardiac thrombi** : Large thrombi in the hert may cause sudden death by mechanical.obstruction of blood flow or through thromboembolism to vital organs.
2. **Arterial thrombi** : These cause ischemic necrosis of the deprived part (infarct) which may lead to gangrene. Sudden death may occur following thrombosis of coronary artery
3. **Venous thrombi** (Phlebothrombosis)

These may cause various effects such as:

i) Thromboembolism

ii) Edema of area drained

iii) Poor wound healing

iv) Skin ulcer

v) Painful thrombosed veins (thrombophlebitis)

vi) Painful white leg (phlegmasia alba dolens) due to ileofemoral venous thrombosis in postpartum cases

vii) Thrombophlebitis migrans in cancer.

4. **Capillary thrombi :** Microthrombi in microcirculation may give rise to disseminated intravascular coagulation (DIC).

Embolism

Embolism is the process of partial or complete obstruction of some part of the cardiovascular system by any mass carried in the circulation; the transported intravascular mass detached from its site of origin is called an embolus. Most usual forms of emboli (90%) are thromboemboli i.e. originating from thrombi or their parts attached from the vessel wall.

Emboli may be of various types : A Depending upon the matter in the emboli, they can be Solid, Liquid and Gaseous.

Solid Emboli : Detached thrombi (thromboemboli), atheromatous material, tumour cell clumps, tissue fragments, parasites, bacterial clumps, foreign bodies.

Liquid Emboli : Fat globules, amniotic fluid, bone marrow

Gaseous Emboli : Air, other gases

B. Depending upon whether infected or not, they are called:

i) Bland, when sterile.

ii) Septic, when infected.

C. Depending upon the source of the emboli, they are classified as:

- Cardiac emboli from left side of heart e.g. emboli originating from atrium and atrial appendages, infarct in the left ventricle, vegetations of endocarditis.
- Arterial emboli e.g. in systemic arteries in the brain, spleen, kidney, intestine.
- Venous emboli e.g. in pulmonary arteries.
- Lymphatic emboli can also occur.

D. Depending upon the flow of blood, two special types of emboli are mentioned:

Paradoxical Embolus

An embolus which is carried from the venous side of circulation to the arterial side or vice versa is called paradoxical or crossed embolus

Arterio-venous communication - patent foramen ovale, septal defect of the heart and arteriovenous shunts in the lungs

Retrograde Embolus

An embolus which travels against the flow of blood is called retrograde embolus e.g. metastatic deposits in the spine from carcinoma prostate.

The spread occurs by retrograde embolism through intraspinal veins which carry tumour emboli from large thoracic and abdominal veins due to increased pressure in body cavities e.g. during coughing or straining.

Thromboembolism

A detached thrombus or part of thrombus constitutes the most common type of embolism. These may arise in the arterial or venous circulation:

Arterial (Systemic) Thromboembolism

Arterial emboli may be derived from the following sources :

A. Causes within the heart (80-85%): These are mural thrombi in the left atrium or left ventricle, vegetations on the mitral or aortic valves, prosthetic heart valves and cardiomyopathy.

B. Causes within the arteries:

- These include emboli developing in relation to atherosclerotic plaques, aortic aneurysms, pulmonary veins and paradoxical arterial emboli from the systemic venous circulation.

The effects of arterial emboli

i) Infarction of the organ or its affected part

ii) Gangrene following infarction in the lower limbs if the collateral circulation is inadequate.

iii) Arteritis and mycotic aneurysm formation from bacterial endocarditis.

iv) Myocardial infarction may occur following coronary embolism.

v) Sudden death may result from coronary embolism or embolism in the middle cerebral artery.

Venous Thromboembolism

Venous emboli may arise from the following sources:

i) Thrombi in the veins of the lower legs are the most common cause of venous emboli.

ii) Thrombi in the pelvic veins.

iii) Thrombi in the veins of the upper limbs.

iv) Thrombosis in cavernous sinus of the brain.

v) Thrombi in the right side of heart.

The most significant effect of venous embolism is obstruction of pulmonary arterial circulation leading to pulmonary embolism

Systemic Embolism

This is the type of arterial embolism that originates commonly from thrombi in the diseased heart, especially in the left ventricle.

Diseased heart include

Myocardial infraction, cardiomyopathy, RHD, congenital heart disease, infective endocarditis, and prosthetic cardiac valves

Fat Embolism

- Obstruction of arterioles and capillaries by fat globules constitutes fat embolism.
- If the obstruction in the circulation is by fragments of adipose tissue, it is called fat-tissue embolism.

Etiology

Following are the important causes of fat embolism:

Traumatic causes : Trauma to bones is the most common cause of fat embolism e.g. in fractures of long bones leading to passage of fatty marrow in circulation, concussions of bones, after orthopaedic surgical procedures etc.

Trauma to soft tissue e.g. laceration of adipose tissue and in puerperiurn due to injury to pelvic fatty tissue.

Non-traumatic causes

- Extensive burns
- Diabetes mellitus
- Fatty liver
- Pancreatitis
- Sickle cell anemia
- Decompression sickness
- Inflammation of bones and soft tissues
- Extrinsic fat or oils introduced into the body.

Consequences of Fat Embolism

- The effects of fat embolism depend upon the size and quantity of fat globules, and whether or not the emboli pass through the lungs into the systemic circulation.
- Pulmonary fat embolism
- The widespread obstruction of pulmonary circulation due to extensive pulmonary embolism can occur and result in sudden death.

Systemic Fat Embolism

Some of the fat globules may pass through the pulmonary circulation such as via patent foramen ovale, arteriovenous shunts in the lungs and vertebral venous plexuses, and get lodged in the capillaries of organs like the brain, kidney, skin etc.

Gas Embolism

- Air, nitrogen and other gases can produce bubbles within the circulation and obstruct the blood vessels causing damage to tissue.
- Two main forms of gas embolism-air embolism and decompression sickness air embolism

Air Embolism

Air embolism occurs when air is introduced into venous or arterial circulation.

Venous Air Embolism

Air may be sucked into systemic veins under the following circumstances:

i) Operations on head and neck, and trauma.

ii) Obstetrical operations and trauma

iii) Intravenous infusion of blood and fluid

iv) Angiography

The effects of venous air embolism depend upon the following factors:

- Amount of air introduced into the circulation- The volume of air necessary to cause death is variable but usually 100-150 ml of air entry is considered fatal.
- Rapidity of entry of a smaller volume of air is important determinant of a fatal outcome.
- Position of the patient during or soon after entry of air is another factor. The air bubbles may ascend into the superior vena cava if the position of head is higher than the trunk (e.g. in upright position) and reach the brain.
- General condition of the patient e.g. in severely ill patients, as little as 40ml of air may have serious results.

The mechanism of death is by entrapment of air emboli in the pulmonary arterial trunk in the right heart.

Arterial Air Embolism

Entry of air into pulmonary vein or its tributaries may occur in the following conditions:

i) Cardiothoracic surgery and trauma.
ii) Paradoxical air embolism.
iii) Arteriography.

The effects of arterial air embolism are in the form of certain characteristic features:

i) Marble skin due to blockage of cutaneous vessels.
ii) Air bubbles in the retinal vessels seen ophthalmoscopically.
iii) Pallor of the tongue due to occlusion of a branch of lingual artery.
iv) Coronary or cerebral arterial air embolism may cause sudden death by much smaller amounts of air than in the venous air embolism.

Decompression Sickness

This is a specialised form of gas embolism known by various names such as caisson's disease, divers palsy or aeroembolism.

Pathogenesis

Decompression sickness is produced when the individual decompresses suddenly, either from high atmospheric pressure to normal level, or from normal pressure to low atmospheric pressure.

Effects

The effects of decompression sickness depend upon the following:

- Depth or altitude reached
- Duration of exposure to altered pressure
- Rate of ascent or descent
- General condition of the individual

Clinical effects of decompression sickness are of 2 types-acute and chronic.

- Acute form occurs due to acute obstruction of small blood vessels in the vicinity of joints and skeletal muscles.

The condition is clinically characterised by the following :

i) 'The bends', as the patient doubles up in bed due to acute pain in joints, ligaments and tendons.
ii) Ischemia
  - Ischemia is defined as deficient blood supply to part of a tissue.
  - The cessation of blood supply may be complete (complete ischemia) or partial (partial ischemia).

The harmful effects of ischemia may result from 3 ways:

1. Hypoxia due to deprivation of oxygen to tissues.
2. Inadequate supply of nutrients to the tissue such as glucose and amino acids.
3. Inadequate clearance of metabolites resulting in accumulation of metabolic waste-products in the affected tissue.

Etiology

A number of causes may produce ischemia.

1. Causes in the Heart

- Inadequate cardiac output resulting from heart block, ventricular arrest and fibrillation may cause hypoxic injury to brain.
- If the arrest continues for 15 seconds, consciousness is lost.
- If the condition lasts for more than 4 minutes, irreversible ischemic damage to brain occurs.
- If it is prolonged for more than 8 minutes, death is inevitable.

2. Causes in the Arteries

The commonest and most important causes of ischemia are due to obstruction in arterial blood supply.

Luminal occlusion such as due to :

- Thrombosis
- Embolism

Causes in the arterial wall such as :

- Vasospasm (e.g. in Raynaud's disease)
- Hypothermia, ergotism
- Arteriosclerosis
- Polyarteritis nodosa
- Thromboangitis obliterans (Buerger's disease)
- Severed vessel wall

Outside pressure on an artery such as:

- Ligature
- Tourniquet
- Tight plaster, bandages
- Torsion

3. Causes in the Veins : Blockage of venous drainage may lead to engorgement and obstruction to arterial blood supply resulting in ischemia.

Luminal occlusion such as in:

- Thrombosis of mesenteric veins
- Cavernous sinus thrombosis

Causes in the vessel wall such as in:

- Varicose veins of the legs

Outside pressure on a vein as in:

- Strangulated hernia
- Intussusceptions
- Volvulus

4. Causes in the microcirculation : Ischemia may result from occlusion of arterioles, capillaries and venules.

Luminal occlusion such as:

- Red cells e.g. in sickle cell anemia, red cells parasitised by malaria, acquired hemolytic anemia, sludging of the blood.
- By white cells e.g. in chronic myeloid leukemia
- By fibrin e.g. defibrination syndrome
- By precipitated cryoglobulins
- By fat embolism
- In decompression sickness.

Causes in the microvasculature wall such as

- Vasculitis e.g. in polyarteritis nodosa, Henoch-Schonlein purpura, Arthus reaction, septicemia.
- Frost-bite injuring the wall of small blood vessels.

Outside pressure on microvasculature as in :

- Bedsores.

Factors Determining the Severity of Ischemic Injury

1. The extent of damage produced by ischemia due to occlusion of arterial or venous blood vessels depends upon a number of factors.
   - Single arterial supply without anastomosis
   - Single arterial supply with rich anastomosis
   - Parallel arterial supply
   - Double blood supply
2. General and cardiovascular status : The general status of an individual as regards cardiovascular function is an important determinant to assess the effect of ischemia.
   i) Anemias (sickle cell anemia, in particular)
   ii) Lowered oxygenation of blood (hypoxemia.)
   iii) Senility with marked coronary atherosclerosis
   iv) Cardiac failure
   v) Blood loss
   vi) Shock.
3. **Type of tissue affected** : The vulnerability of tissue of the body to the effect of ischemia is variable.

- Brain (cerebral cortical neurons, in particular).
- Heart (myocardial cells)
- Kidney (especially epithelial cells of proximal convoluted tubules).

4. Rapidity of development
5. Degree of vascular occlusion : Complete vascular obstruction results in more severe ischemic injury than the partial occlusion.

Effects Ischemia

The effects of ischemia are variable and range from 'no change' to 'sudden death'.

1. **No effects on the tissues** - If the collateral channels develop adequately so that the effect of ischemia fails to occur.
2. **Functional disturbances** - These result when collateral channels are able to supply blood during normal activity but the supply is not adequate to withstand the effect of exertion. The examples are angina pectoris and intermittent claudication.
3. **Cellular changes**
   - Partial ischemia may produce 'cellular changes such as cloudy swelling, fatty change, atrophy and replacement fibrosis.
   - Infarction results when the deprivation of blood supply is complete so as to cause necrosis of tissue affected.
4. **Sudden death**. The cause of sudden death from ischemia is usually myocardial and cerebral infarction.

Infarction

It is the process of tissue necrosis resulting from some form of circulatory insufficiency

Etiology

- All the causes of ischemia can cause infarction. There are a few other note-worthy features in infarcts
- Most commonly, infarcts are caused by interrupted arterial blood supply, called ischemic necrosis
- Less commonly, venous obstruction can produce infarcts termed stagnant hypoxia.
- Generally, sudden, complete, and continuous occlusion by thrombosis or embolism produces infarcts.
- Infants may be produced by nonocclusive circulatory insufficiency as well e.g. incomplete atherosclerotic narrowing of coronary arteries may produce myocardial infarction due to acute coronary insufficiency.

Types of Infarcts

Infarcts are classified depending upon different features :

According to their Colour, infarcts may be :

Pale or Anemic

- It is due to an arterial occlusion and are seen in compact organs e.g. in the kidneys, heart, spleen.

Red or Hemorrhagic

- It is seen in soft loose tissues and are caused either by pulmonary arterial obstruction (e.g. in the lungs) or by arterial or venous occlusion (e.g. in the intestines).

According to their age, Infarcts are Classified as :

- Recent or fresh
- Old or healed

According to presence or absence of infection, they may be:

- Bland, when free of bacterial contamination
- Septic, when infected.

Pathogenesis

The process of infarction takes place as follows:

Localised hyperemia due to local anoxemia occurs immediately after obstruction of the blood supply

↓

Within a few hours, the affected part becomes swollen due to edema and hemorrhage

↓

The amount of hemorrhage is variable, being more 'marked in the Lungs and spleen, and less extensive in the kidneys and heart

↓

Cellular changes such as cloudy swelling and degeneration appear early, while death of the cells or necrosis occurs in 12-48 hours

↓

There is progressive autolysis of the necrotic tissue and hemolysis of the red cells

An acute inflammatory reaction and hyperemia appear at the same time in the surrounding tissues in response to products of autolysis

↓

Blood pigments, hematoidin and hemosiderin, Liberated by hemolysis are deposited in the infarct. At this stage, most infarcts become pale due to loss of red cells

↓

Following this, there is progressive in growth of granulation tissue from the margin of the infarct so that eventually the infarct is replaced by a fibrous scar

↓

Dystrophic calcification may occur sometimes

↓

However, in the case of infarct brain, there is liquefactive necrosis, which heals by gliosis

Infarcts of Different Organs

A few representative examples of infarction seen in some organs namely Lungs, kidney, liver and spleen. Myocardial infarction, cerebral infarction and infarction of small intestines are few examples.

Tumors

Cancer

Cancer is a group of disorders characterized by uncontrolled growth of abnormal cells. Cancer can occur at any site in the body and more than 1000 types of cancers have been characterized. Cancer is not one disease, each cancer occurring at different site is different from that occurring at other site. Despite them being different there are some similarities due to which these diseases are grouped together. These characteristics are:

1. **Uncontrolled growth:** under normal circumstances the cells divide in an orderly manners, the division stops once the purpose of division is over however, in cancer the cells continue to divide.
2. Invasion : The cancer cells have a propensity to invade the basement membrane and adjoining structures, unlike normal cells that never do.
3. Metastasis: metastasis is spread of tumors to distant location like lung, bone or liver. This often occurs late in the course of disease and most cancer in this stage are incurable except some.
4. Inhibition of apoptosis: Apoptosis or programmed cell death is characteristic of normal cell wherein the cell dies after certain number of cell division or time, in cancer the cells continue to divide and do not die. Thus obtaining immortality.
5. Loss of contact inhibition: Normal cells stop dividing once they come in contact with each other, however the cancer cells continue to divide forming a mass or tumor.
6. Influence microenvironment: the tumor cells influence the cells around them to create environment more conducive of their growth by secreting some substances like interlukin and growth factors. These lead to creation of environment required for tumours to grow e.g. development of new blood vessels (angiogenesis) to feed it with oxygen and other nutrients required for growth. This also help them evade the immune system.

The difference in various cancers are :

1. Tumor doubling time: this is the time require for the tumor mass to double as the name indicate. Some tumor has shorter doubling time i.e. they divide faster while other has long doubling time, i.e. they grow slowly. Hence some tumors grow very fast becoming big and apparent in matter of months while other takes years to grow.
2. Response to therapy: Some tumors are best treated with surgery while others are more

susceptible to radiation or chemotherapy. Most tumors require two or more treatment in combination for best survival results.

3. Site of cancer: tumors developing at different site behave differently like a tumor in the bresast will form a lump while blood tumors will not have any lump formation. Further some tumors have good prognosis and better survival after treatment e.g. thyroid tumors on the other hand some tumor have very poor prognosis despite best treatment e.g. gallbladder cancer.

How cancer develop?

Cancer develop by changes in the genes that control various processes in the cell. These genetic changes can be inherited from the parents or can be acquired during the life time of an individual and these genetic changes are called sporadic changes. These acquired or spontaneous changes can occur due to exposure to the environment like pollution, aromatic hydrocarbons, sun ray etc. This interaction of human genetic material with environmental agents and its effect is called gene-environmental interaction.

Some of these genetic changes are common while others varies from person to person developing cancer. And, hence each patient can have unique genetic damage and unique treatment of cancers.

Additionally, the genetic changes within one cancer could be many, and this results in multiclonality of the cancer, wherein, a cancer is a collection of clones of cells each with different genetic changes in each, and each of these clones will behave differently.

Risk Factor and causes of cancer

As said earlier, that cancer is not a single disease but a group of disorders and hence, the risk factors for cancer by site also varies however, there are a few major factors that can give rise to cancer and some time at more than one site

Further it is not usually possible to know cause of cancer in each case or their may be more than one cause of cancer development. Risk factors are on the other hand, one which increases the chance of a person to develop cancer.

1. Age : Advancing age is one of the most common risk factor for cancer. If one looks at the world statistics the median age at cancer diagnosis is 66 years, this figure is about a decade lower in India. However, the cancer can occur at any age and even in Children. The reason for development of cancer in older people is due to the fact that the repair capabilities of an individual keep decreasing with advancing age, and other chronic diseases also sets in. The role played by them is still not known.

2. Carcinogens : Carcinogens, is a group of cancer causing substances, that are mostly chemical in nature. These substances when inhaled or ingested directly damage the genes of the individual. The exposure and damage, is often dose dependent and also depends on an individuals capability of metabolising these chemicals, i.e. genetic predisposition. This is true for most of the chemicals a man gets exposed to in his life time. Some of these chemicals are enumerated below.

- Indoor Emissions from the Household Combustion of Coal
- Mineral Oils: Untreated and Mildly Treated
- Nickel Compounds
- Secondhand Tobacco Smoke (Environmental Tobacco Smoke)
- Arsenic
- Asbestos
- Benzene
- Cadmium
- Ethylene Oxide
- Formaldehyde
- Aflatoxins
- Aristolochic Acids
- Benzidine
- Beryllium
- 1,3-Butadiene
- Coal Tar and Coal-Tar Pitch
- Coke-Oven Emissions
- Crystalline Silica (respirable size)
- Erionite

- Hexavalent Chromium Compounds
- Radon
- Soot
- Strong Inorganic Acid Mists Containing Sulfuric Acid
- Thorium
- Vinyl Chloride
- Wood Dust

3. Alcohol : Alcohol drinking is known to increase the risk of oral, pharyngeal, oesophagus, larynx, liver, and breast cancer. The risk of development of cancer is dose dependent, i.e. more you drink more are the chances of developing cancers. The risk increases many fold in those who also ingest tobacco. The guidelines for those who consume alcohol is to also do so in moderation. There are no Indian Guidelines available but the Federal governments guidelines for Americans defines moderate drinking as one drink per day for women and two drinks per day for man. Some studies also suggest that alcohol containing drinks like red wine has anti oxidant property due to presence of compounds like reservetol, however their is no scientific evidence to suggest any protection from drinking red wine.

It is estimated that 3.5% of all cancer in USA are due to alcohol consumption. However, for Renal cell carcinoma and for non-Hodgkin's lymphoma alcohol is found to reduce the risk. There are many ways the alcohol can cause carcinogenesis, one of these is conversion to acetaldehyde which directly damages the DNA. Othar than that alcohol also increases the production of free radicals in the body leading to genotoxicity and also peroxidation of proteins and lipids in the body. It also reduces the levels of micronutrients in the body. It also increases the level of estrogens in the body, hence promoting breast cancer in women.

Alcohol is metabolised by enzyme alcohol dehydrogenase, or ADH, some of the races like Japanese, Chinese and Koreans have hyperactive form of this gene and metabolise alcohol very fast and that prevent development of alcohol related cancer in them. Those who carry aldehyde dehydrogenase 2 (ALDH2) defective gene the aldehyde build up his higher and the genetic damage too is consequently higher. It takes over 10 years for the risk of development of cancer to decrease after stopping alcohol ingestion, this suggest that not starting alcohol is the best strategy for cancer control.

4. Tobacco : Use of tobacco in any form is the most important cause of cancer development in humans. Tobacco is classified as somke and smokeless (chewing or snuff). It causes cancer of the lung, larynx, oral cavity, oesophagus, pharynx, bladder, kidney, liver, stomach, pancreas, colon and rectum, and cervix, as well as acute myeloid leukemia.

There is no safe level of tobacco, as there is for alcohol. And, hence, any amount or duration of tobacco use can lead to development of cancer. Unlike Alcohol the risk of development of cancer and subsequent risk of death decreases after quitting tobacco, even quitting at the time of cancer diagnosis reduces death.

There are more than 7,000 chemicals in tobacco smoke, at least 250 are known to be harmful, including hydrogen cyanide, aromatic amines, acetaldehyde, nitrosamines, carbon monoxide, and ammonia. Other than cancer tobacco also causes heart disease, stroke, aortic aneurysm, chronic obstructive pulmonary disease (COPD), diabetes, osteoporosis, rheumatoid arthritis, age-related macular degeneration, cataracts. Smokers are at higher risk of developing pneumonia, tuberculosis, and other airway infections. Thus making it one of the common risk factor for the development of most non communicable diseases (NCD). Tobacco is also one of the commonest cause of cancer deaths world over.

Tobacco smoking is not only harmful for those who does but is also for others living with them. It has been proved that passive smoking or second hand smoke is equally dangerous. It is known to cause lung cancer in adults, in America about 8000 deaths from lung cancer every year are attributed to second hand smoke.

Presence of substance called Nicotine makes it addictive. Nicotine is a neurostimulator. The light cigarettes or even the electronic cigarettes carries the risk and hence, in general there are no safe tobacco products.

5. Diet : A number of studies have evaluated dietary products in cancer. Laboratory studies have also evaluated specific nutrients in the carcinogenesis, however, it is not possible to say with conviction that diet or any specific dietary constituent increase or decrease the risk of cancer. The reason for this is ones inability to do a case control epidemiological interventional study. The evidence however suggest that diet rich in anti-oxidants, Calcium decrease the risk of cancer, use of artificial sweeteners, higher ingestion of heavy metals like lead, chromium, arsenic can cause cancer. Charred meat contain PAH and can increase the risk. Other risk of calorie and meat intake is explained by obesity rather than the ingestion of meat itself.

6. Inflammation : Inflammation is a normal physiological response that starts with release of certain substance in the blood called cytokinins and activation of immune response in response to an injury or assault. These substance induce cell division for the repair. They also promote abnormal cells to divide, thus promoting cancer. On the other hand chronic inflammation itself can cause cancer e.g. ulcerative colitis.

7. Hormones : Estrogen, a female hormone secreted from the ovary is know to be a risk factor for development of breast cancer. This hormone is responsible for development of secondary sexual characteristics in women, and breast is one target organ for the action of this hormone. The increase in exposure to estrogen is said to be in women who have early menarche, late menopause, older age at first pregnancy, reduce lactation period and nulliparity.

Apart from endogenous hormone women using hormone replacement therapy and oral contraception pills containing estrogen only are also at risk of developing breast cancer.

8. Obesity : Obesity is defined as an individual having body mass index (BMI) of over 30. People having BMI of 25-29.9 are called over weight. Those having BMI between 18.5 and 24.9 are called healthy.

Obesity has been shown to cause cancer of the breast, colon, rectum, endometrium, esophagus, kidney, pancreas, and gallbladder. It is said that being physically inactive, eating unhealthy diet leads to being obese and is responsible for development of cancer.

9. Immunosupression : Development of immunosupression due to medication as in case of transplant or by infections such as HIV increases the risk of cancer development as the body is not able to respond to the physical or chemical injury in the normal physiological way. Viruses play an important role here, like Epstein Barr virus, hepatitis virus B and C and human herpes virus.

10. Infections : Other than immunosupression leading to infection and chronic inflammation acute infection by virus, bacteria or parasite is also supposed to increase the risk of cancer. Of these, the virus that can produce cancer are listed above except the Human papilloma virus that increase the risk of cervix and oropharangeal cancer. Other than this Human T-Cell Leukemia/Lymphoma Virus Type 1 (HTLV-1) and Kaposi Sarcoma-Associated Herpesvirus (KSHV) also increase cancer risk.

Among the bacteria that increase the cancer risk are Helicobacter pylori in gastric cancer and other parasites like Opisthorchis viverrini, Schistosoma hematobium in liver and bladder cancers.

The mechanism of carcinogenesis is said to be through inflammatory pathway.

11. Sun exposure : Exposure to sunlinght specially containing UV rays is supposed to increase the risk of skin cancers. The risk is higher in Caucasians who lack melanin, and lower in people who express higher melanin in skin.

12. Radiation : Ionizing radiation of certain wavelength causes direct DNA damage and can produce cancer. This include radon, x-rays, gamma rays, and other forms of high-energy radiation that are also used to treat cancer. The radiation induce carcinogenesis is dose dependent and dose is cumulative life exposure.

Terminologies

Tumor (US) or tumour (UK) means a swelling (Latin)

Neoplasia or Neoplasm: "Is new growth or tumours mass that is not under the physiological control." The neoplasms could be malignant or benign however the term cancer or carcinoma is reserved for malignant neoplasm.

As per the international classification of diseases, the neoplasm are divided into four types :

1. Benign - Circumcised, localized do not invade or metastasize.
2. Malignant- invasion and metastasis is present
3. In situ- They are also localized but have a potential to transform into malignant neoplasm and invade locally and also metastasize.
4. Indeterminate- these are neoplasms where the biological behaviour of tumor is not certain and they may behave either as benign or malignant

Oncology: Branch of science dealing with study of cancer is called oncology

This is further classified into surgical and medical oncology, depending on the treatment done by surgery or medicine.

Radiotherapy- also known as Radiation therapy or Radiation medicine is the branch of medicine dealing with treatment of cancer with the use of high energy rays.

External radiotherapy or tele therapy: use of rays externally from outside the body mainly with the high energy X-rays using a cathode tube or with gamma rays using cobalt source.

Internal radiotherapy or Brachytherapy: treatment by placing the radioactive material inside the body using the tubes

Nuclear Medicine : Branch of science dealing with the injecting of radioisotope in the body for diagnosis or treatment of cancer and other diseases.

Chemotherapy : Use of chemical compounds for treatment of cancer is called chemotherapy this can be given by oral or intravenous route

Immunotherapy : Use of mono and polyclonal antibodies to treat cancer.

Hormone therapy : Use of hormones or suppression of hormones to treat certain cancers.

Curative treatment : Use of one or combination of above treatments with intention of curing the cancer

Palliative treatment : Use of one or combination of above treatments for relieving the symptoms is called palliative treatment, here the intention is not to cure or the cancer has spread so much that it cannot be cured.

Supportive therapy : The treatment given to relieve symptoms but will have no effect on the cancer cells is called supportive therapy.

Psycho oncology- branch of medicine dealing with the psychological effect of cancer or its treatment and relieving these effects by medicine or psychological treatment.

Clone- a group of cells that has arisen from the same cell

Multiclonality : a tumour composed of more than one clone of cells.

Cystic : A tumor primarily filled with liquid

Solid : A tumour primarily composed of solid nests of cells.

Necrosis : Death of some or all of cells in a tumor or an organ. It's a premature death of cells in living tissue mainly by autolysis. This usually happens due to factors external to the tissue or tumor such as toxins, trauma, reduced blood supply, infection or autophagy. There are various types of necrosis

a. Coaugulative necrosis: Formation of gelatinous substance in the tissue due to protein denaturation, the cellular structure of the tissue is maintained and can still be seen under the light microscope

b. Liquefective necrosis: As the name indicate this results in formation of liquid in the mass or organ, mainly caused by digestion of the tissue. The liquid is usually creamy yellow due to accumulation of dead leukosytes in the liquid, can be white or greenish and is commonly called as 'Pus"

c. Gangrenous necrosis: This leads to mummified tissue and can be considered as type of coaugulative nectosis

d. Caseous necrosis: leads to formation of caseous material inside the tissue by a combination of coaugulative and liquefective necrosis

e. Fat necrosis: occurs in fat or fatty tissues and organs, results from the activation of lipase

f. Fibrinoid necrosis: Special form of necrosis caused by immune mediated vascular damage.

Apoptosis : is programmed cell death, that occurs at the end of cells life span.

Tissue of Origin	Benign	Malignant
I. Tumours of one Parenchymal Cell Type		
A. Epithelial Tumours		
1. Squamous epithelium	Squamous cell papilloma	Squamous cell carcinoma
2. Transitional epithelium	Transitional cell papilloma	Transitional cell carcinoma
3. Glandular epithelium	Adenoma	Adenocarcinoma
4. Basal cell layer skin	Basal cell adenoma	Basal cell carcinoma
5. Neuroectoderm	Naevus	Melanoma
6. Hepatocytes	Liver cell adenoma carcinoma	hepatocellular
7. Placenta (Chorionic Epithelium)	Hydatidiform mole	Choriocarcinoma
B. Non-epithelial (Mesenchymal) Tumours		
1. Adipose tissue	Lipoma	Liposarcoma
2. Adult fibrous tissue	Fibroma	Fibrosarcoma
3. Embryonic fibrous tissue	Myxoma	Myxosarcoma
4. Cartilage	Chondroma	Chondrosarcoma
5. Bone	Osteoma	Osteosarcoma
6. Synovium	—	Synovial sarcoma
7. Smooth muscle	Lei omyoma	Leiomyosarcoma
8. Skeletal muscle	Rhabdomyoma	Rhabdomyosarcoma
9. Mesothelium	—	Mesothelioma
10. Blood vessels	Haemangioma	Angiosarcoma
11. Lymph vessels	Lymphangioma	Lymphangiosarcoma
14. Haematopoietic cells	—	Leukaemias
15. Lymphoid tissue	-	Malignant lymphomas
16. Nerve sheath	Neurilemmoma, Neurofibroma	Neurofibrosarcoma
II Mixed Tumours		
Salivary Glands	Pleomorphic adenoma (mixed salivary tumour)	Malignant mixed salivary tumour

III. Tumours of more than one germ Cell Layer		
Totipotent cells in gonads or in embryonal rests	Mature teratoma	Immature teratoma

Nomenclature

Based on the tissue of origin

Malignant neoplasms arising from embryologically derived tissue from ectoderm or endoderm are usually called as carcinomas

Squamous cell carcinoma - that arises in squamous epithelium

Adeno carcinoma - that arises in glandular epithelium

Hepatocellular carcinoma - tumor arising in live hepatocytes

Renal cell carcinoma - arising in the kidney cells

Malignant neoplasms arising from connective tissue (mesoderm) are commonly called as sarcoma

Malignant or benign neoplasms that have more than one celltype but same germ line are called mixed tumors

Teratoma are tumors composed of more than one cell type and arising from more than one germ line

Blastomas are tumors that arise from premittive embryonic tissue

Hematopoietic and lymphoid cells give rise to leukemias and lymphomas. They have no benign counterpart.

Gliomas arise from glial cells also do not have any benign counterpart they are all malignant.

CHAPTER

23

Infectious and Nutritional Disorders

Infection

Infections are an important cause of morbidity and mortality in both community as well as in hospitals. These infections are caused by a lot of microbes including bacteria, viruses, fungi and parasites. These microbes are ubiquitous in nature where they are present in environment as saprophytes. In human, these microbes are usually present as commensal over skin, intestinal mucosa, oral cavity etc.

Types of pathogenic microbes

1. **Exogenous microbes** : These microbes are present in environment as saprophytes. When enters in human body, may result in infection. Most common example of exogenous microbes are *Mycobacterium tuberculosis* and *Aspergillus* spp. These microbes enter in human body through the inhalation, ingestion or the direct penetration of the skin.
2. **Endogenous microbes** : These microbes are the commensal flora of human being where they reside over skin and mucosal surfaces. Once this commensal flora is altered by the use of inappropriate broad spectrum antibiotics, pathogenic drug resistant microbes colonise the mucosal surface and may result in infection. Common example of this condition is *Candida* infection. *Candida* along with other bacteria as *Escherichia coli*, *Enterococcus* reside in human intestine as commensal. Use of broad spectrum antibiotics removes all the normal commensal bacteria without having any effect on *Candida*, resulting in candida colonization followed by its dissemination. Another example of endogenous microbe is *Staphylococcus aureus*. This microbe resides in anterior nares, axilla & in perineum and get transmitted to other body parts through the hands & fingers and results in cutaneous lesions such as boils, furuncles, carbuncles etc.

Mode of transmission of microbes : These microbes enter in human body through any of the below mentioned route.

1. **Skin penetration** : Human skin harbor a lot of microbial flora such as Coagulase negative staphylococci, *Enterococcus*, *Streptococcus* spp, Diptheroids etc. These commensal microbes prevent the proliferation of pathogenic microbes. Intact skin prevents the entry of these microorganism. When there is breach in the continuity and integrity of the skin epithelial cells, these microbes may enter and result in localized suppurative lesions. Some microbe enter in the blood through the skin biting by Aedes mosquito which transmits dengue & chikungunya, Anopheles mosquito transmitting malaria, and sand fly transmitting leishmaniasis. Some viruses especially HIV, Hepatitis B and C virus are transmitted through the needle prick injury and well as by sexual contact. Some parasites such as *Ancylostoma duodenale* and *Strongyloides stercoralis* enter in the systemic circulation after piercing the intact skin.

2. **Inhalation** : Inhalation is the most common mode of transmission of microbes. We inhale the environmental oxygen that contains conidia, spores and microbes. Patients suffering from upper respiratory tract infections, pneumonia and some systemic infections such as chicken pox, measles and mumps generate air droplets which enter through inhalation and may result in respiratory tract infection. The droplet containing microbes, generated during coughing and sneezing, of the size <5mm may reach the alveoli and result in pneumonia. Large size droplets are entrapped in nose itself. Microbes are entrapped in mucus layer on columnar epithelial cells which are expelled later by cilia. Most common example is the transmission of *Mycobacterium tuberculosis* where patients

coughs and transmits the infection to the persons residing in close contacts particularly in overcrowded places.

3. **Ingestion** : Oral ingestion is the most common mode of transmission of gastrointestinal pathogenes. Low gastric pH and normal intestinal commensal flora prevent the intestinal infection. Low gastric pH and bile salt removes most of the pathogens but some microbes such as *Shigella* and non-enveloped viral pathogens enters in intestine and may results in infections. Contamination of od and water especially by enteropathogens may results in intestinal infection. Different pathogenic strains of *Escherichia coli* namely EPEC, EIEC, ETEC, EAEC, EHEC, *Salmonella*, *Vibrio* results in diarrhea and/or dysentery. Non-enveloped viruses such as *Poliovirus, Rotavirus, Norovirus* result in watery diarrhea. Parasite viz *Entamoeba histolytica*, *Giardia lamblia*, *Ascaris lumbricoides*, *Enterobius vermicularis* result in human infection after consumption of contaminated food and water. Some parasites such as *Taenia solium* and *Taenia saginata* infect human gut after consumption of raw or poorly cooked pork or beef respectively.

4. **Genitourinary tract** : Most of the genitourinary tract infections are transmitted through sexual activities. The sexually transmitted diseases (STDs) like syphillis, gonorrhoea, chlamydiasis, HIV/ AIDS are common among migrant workers, truck drivers, drug addicts and sex workers. Females suffering from these infections are more likely to transmit these pathogenes to their partners. Urinary tract of humans may get infected; once there is an obstruction in the flow of urine especially in presence of stone/prostatic enlargement or by the soiling of perineum by fecal coliforms. In hospital setting, urinary tract infections may occur after the insertion of indwelling Foley's catheter and may result in cystitis.

5. **Vertical transmission** : These infections are transmitted from infected mother to fetus during pregnancy. Infections during pregnancy may result in unwanted complication such as miscarriage or congenital defects in new born babies. Classical example of the vertical transmission is the Rubella infection where congenital defect in heart (Patent ductus arteriosus, Aortic stenosis), cataract and conductive deafness develops when female get infected during first trimester of pregnancy. Other viral pathogens such as *Varicella zoster, Cytomegalovirus, Hepatitis B* virus also results in vertical transmission. Some bacterial infections during pregnancy such as syphillis & gonorrhea may results in congenital syphillis and ophthalmia neonatorum respectively in newborn babies.

Common Microbial infections and their clinical features

1. **Bacterial** : Tuberculosis, syphillis, gonorrhoea, abscess, diphtheria, urinary tract infection, enteric fever, dysentery, cholera
2. **Viral infection** : AIDS, acute and chronic viral hepatitis, polio, dengue, chikungunya, chicken pox
3. **Fungal infection** : Candidiasis, aspergillosis, zygomycosis
4. **Parasitic infection** : Malaria, filaria, leishmaniasis, ascariasis, hook worm infestation, amoebiasis

Tuberculosis

Tubercuosis, an endemic disease in India, is caused by *Mycobacterium tuberculosis*. This is an acid fast bacillus, which is transmitted through the inhalation of the air droplets. It is affecting at least one third of the population as latent infection , but disease get manifested in few especially among malnourished and immune-compromised ones.

Mycobacterium tuberculosis can involve any organ of body but primarily affects the lungs. Tuberculosis primarily affects the lower lobe of lungs with peri-hilar lymph nodes enlargement. This clinical condition is known as primary tuberculosis which manifest as a pneumonia. This clinical scenario is self limiting in most of the cases. In person with some form of immunosupression, especially in HIV patients, reactivation of tuberculosis occurs and results in disseminated tuberculosis. This condition is known as secondary tuberculosis in which upper lobes of the lungs are involved and a cavity is formed. While coughing, patients suffering from secondary tuberculosis, release plenty of acid fast bacilli in respiratory secretions and thus transmit the microbe. In secondary tuberculosis, classical clinical features of tuberculosis as low grade fever, cough for >2 weeks, night sweat, weight loss, weakness are present.

In secondary tuberculosis, there is hematogenous spread to the various organs. Lymph nodes are the 2nd most commonly involved organs where it manifests as lymph node enlargement (matted lymph nodes). It also involves the vertebral spine and results in Pott's spine (collapse of affected vertebra). It also infects the meninges and results in subacute/ chronic meningitis in which low grade fever, headache, vomiting occurs.

Sample : In cases of pulmonary TB, two sputum samples including one morning samples are collected.

Diagnosis : *Mycobacterium tuberculosis* is diagnosed by detection of acid fast bacilli in clinical samples. Clinical samples are stained by Ziehl Neelsen (ZN) staining whereas 25% H_2SO_4 is used as decoloriser. Culture is done on Lowenstein Jensen (LJ) Media which takes 21-56 days to yield bacterial growth. Nowdays, molecular detection methods such as Gene Xpert & LPA are widely used in our National programme for early diagnosis of tuberculosis.

Treatment: Rifampicin, isoniazid, ethambutol, pyrizinamide, streptomycin is most widely used as 1st line drugs.

Syphillis

Syphillis is a sexually transmitted disease which is caused by a spirochete, *Treponema pallidum.* At the site of entry, this microbe forms a hard, non-tender, painless nodule (Chancre). Following this, hematogenous spread occurs and results in secondary, tertiary syphillis. In secondary syphillis, which is a highly infectious stage, painless non-itching lesions appear on the palm. In tertiary syphillis, granulomatous lesions appeared on mucosa of oral cavity. It may also involve brain and heart as well.

If a pregnant lady is infected with *Treponema pallidum*, congenital syphillis may result to the new born baby. In this condition, baby may have the signs of running nose, nasal septum perforation, interstitial keratitis and effusion in knee joint.

Diagnosis : Syphillis is screened by VDRL (Veneral Disease Research Laboratory) test and results are confirmed by TPHA (Treponema pallidum hemagglutination) test. VDRL test is usually performed during ante-natal check up, before blood transfusion and in high risk patients.

Gonorrhoea

Gonorrhoea, also a sexually transmitted infection, caused by *Neisseria gonorrhoeae*. It primarily affects the urethra in males and cervix in female. Gonorrhoea is characterized by mucopurulent discharge from urethra or cervix. Asymptomatic infection by this microbe may result in infertility in females. Females suffering from cervictis may transmit the infection to new born babies and result in ophthalmia neonatorum. In this, there is marked purulent conjunctivitis.

Sample : Urethral and cervical discharge is collected.

Diagnosis : Gram's stain of purulent discharge is performed. Presence of intracellular Gram negative cocci (pink coloured cocci inside the neutrophills) is diagnostic of *Neisseria gonorrhoae* infection. Culture is done on chocolate agar and Thayer martin agar.

Staphylococcus aureus infections

Staphylococcus aureus is a gram positive cocci (Purple coloured on Gram's staining), usually arranged in clusters. This microbe resides in anterior nares, axilla and in perineum of human being. From these sites, the bacterium may spread to other parts of body and may cause infection.

Staphylococcus aureus is the most common cause of localized suppurative lesion such as folliculitis, furuncle, carbuncle, osteomyelitis and stitch abscess. It may also results in blood stream infection (septicemia) especially in newborn babies. It also results in staphylococcal food poisoning where preformed toxin (already present in food) in milk and milk products are consumed. It may also result in toxin mediated other infection such as Toxic shock syndrome.

Sample : Aspirated pus in case of suppurative lesions

Diagnosis : On Gram's staining, Gram positive cocci arranged in clusters are observed. It easily grows on MacConkey and Blood agar. On Blood agar, it forms opaque shiny colony with a zone of beta hemolysis. Catalase test is positive which differentiate it from Streptococci (Catalaste test negative). Slide and tube coagulase are done to confirm the organism.

Treatment : Before starting treatment, it is important to determine the methicillin susceptibility. If the organism is methicillin sensitive, any beta lactam group of antibiotics except penicillin is given but cloxacillin and flucloxacillin is a better option.

If the organism is Methicillin resistant (MRSA), then it is resistant to all beta lactam group of antibiotics including combination of beta lactamase inhibitors. In such infection, vancomycin is the drug of choice.

Other drugs are cotrimoxazole, clindamycin, erythromycin, moxifloxacin and ciprofloxacin are also effective against staphylococci.

Diphtheria

It is a life threatening infection of oropharynx, caused by a gram positive bacilli, *Corynebacterium diphtheriae*. This bacterium releases the toxin in oropharynx. This toxin inhibits the protein synthesis and results in necrosis of tissues with formation of a tough white membrane like layer on the lesions (Pseudomembrane). This pseudomembrane may extend to the deeper part as larynx & trachea and results in respiratory obstruction. Pseudomembrane is most characteristic feature as its on removal, bleeding occurs.

Sample : Throat swab from the margin of the membrane and sent for microbiological workup

Diagnosis : Usually clinical diagnosis but throat swab from membrane is sent for Gram's stain and Albert stain. Sample is also inoculated on Loeffler serum slope for its early diagnosis.

Treatment : Antitoxin is must as clinical features are only due to the toxin. Antibacterial treatment is also given to reduce the bacterial load.

Prophylaxis : DPT vaccine is given intramuscularly in anterolateral aspect of the thigh at the age of 6, 10, 14 weeks. This vaccine contains the Diptheria toxoid against which protective antibodies are produced.

Escherichia coli infections

Escherichia coli is a normal commensal flora in intestine. It is a gram negative bacilli. It is the most common cause of urinary tract infection. It also results in septicemia. Although it is a commensal in intestine but some strains of the bacterium may results in diarrhea and dysentery.

For diagnosis of UTI, midstream urine sample is collected.

Enteric fever

Enteric fever, commonly known as typhoid fever is caused by *Salmonella Typhi*. The organism is a strict human pathogen, which is excreted in urine and feces of chronic carriers. People get infected after consumption of faecal contaminated food and water. Enteric fever is characterized by fever, malaise, weakness, abdominal pain with hepato-spleenomegaly.

Diagnosis : In the first week of illness, blood culture may yield *Salmonella*. In subsequent weeks, Widal test is performed to detect antibodies against somatic and flagellar antigens of *Salmonella Typhi* and *paratyphi* A and B. In those patients who presents to clinicians in 3rd week onwards, may yield Salmonella on fecal and urine culture.

Treatment : Inj. Ceftriaxone is the drug of choice for enteric fever. Other antibiotics such as cotrimoxazole, azithromycin, chloremphenicol, ciprofloxacin are also used.

Shigellosis

The most common cause of dysentery in India is *Shigella* infection, which get transmitted through ingestion of faecal contaminated food and water. The bacterium attaches and invades the intestinal mucosa, resulting in passage of blood and mucous in stool.

Diagnosis : On microscopy, pus cells and RBCs are present in stool samples. For culture, MacConkey and DCA agar are used.

Cholera

Cholera, a fatal diarrheal disease is caused by *Vibrio cholarae*. The disease is characterized by painless, effortless profuse vomiting and diarrhea. Stool contain large amount of mucous which gives appearance of Rice water stool.

The bacterium infects humans after consumption of contaminated food and water. The microbe releases a toxin which inhibits the absorption of Na^+ and Cl^- in the intestine and result in watery diarrhea. Cholera has a higher morbidity and mortality due to rapid development of dehydration.

Diagnosis: Classical clinical history of passage of rice water stool is a presumptive diagnosis of cholera disease. In direct stool wet mount, curved bacilli showing darting motility are observed. For culture, selective culture medium TCBS (Thiosulphate citrate bile salt sucrose agar) is used.

Treatment: Intravenous fluids are given to combat dehydration. Antibiotics especially tetracycline are most widely used.

Pseudomonas aeruginosa infections

Pseudomonas aeruginosa is a gram negative bacillus which commonly causes wound infection especially in burn patients, infection of external auditory canal. This microbe has a property to survive in the disinfectant frequently used in hospital so that this is a commonly pathogen causing hospital acquired infections.

Fungal infections

Fungi are ubiquitous eukaryotes which are present in environment as saprophytes. Some fungi, especially *Candida* is a commensal flora of skin and mucous membrane of intestine. These fungi are usually non-pathogenic, but become pathogenic, once there is suppression of immune system especially in HIV infected patients. These fungal pathogens are also common in patient taking any immunospuressive agents as steroids, neutropenic patients, cancer patients. Common fungal infections are:

Candidiasis

Candidiasis is caused by an unicellular yeast, *Candida*. It causes a wide range of human infection. It commonly causes muco-cutaneous candidiasis as oral thrush in newborn babies; oropharangeal candidiasis especially in HIV infected patients, cutaneous dermatitis in preterm babies with frequent involvement of perianal folds. *Candida* also causes septicemia especially in new born and hemato-oncological patients. Esophageal candidiasis is considered as a cardinal sign of HIV infection.

Diagnosis : Scraping from lesions as oral thrush is collected. KOH wet mount is prepared and examined for presence of yeast cells and pseudohyphae. Concomitant Gram's stain is also performed. Culture is done on SDA agar.

Aspergillosis

Aspergillosis is a common infection in immunocompromised patients especially in neutropenic patients. It is caused by *Aspergillus* fungi. It is present in environment as saprotroph. It causes Allergic Brocho-pulmonary aspergillosis (ABPA), fungal corneal ulcer, otomycosis in immunocompetent patients. In neutropenic and hemato-oncological patients, bone marrow transplant patients, it causes disseminated *Aspergillus* infections.

Diagnosis : Sputum and BAL (Brochoalveolar Lavage) is collected and KOH wet mount is performed. Presence of septate branched hyaline hyphae (colourless) with branching at 45^0 is a characteristic of *Aspergillus*. Culture is done on SDA agar.

Cryptococcosis

Cryptococcosis is caused by *Cryptococcus neoformans* which is capsulated yeast. It enters in human body through the inhalation. It most commonly affects the CNS and skin. In HIV patients having low CD4+T cells, it results in meningitis.

Diagnosis : India Ink wet mount of CSF is examined for the presence of capsulated budding yeast cells. Culture is done on SDA agar.

Zygomycotic infection

These infections are caused by *Rhizopus* and *Mucor* which primarily infect the diabetic patients. These fungi primarily involve the paranasal sinuses (Maxillary, frontal) and may extend to the orbit and brain.

Diagnosis : KOH wet mount is prepared where presence of broad, aseptate, branched twisted hyphae are observed. These fungi rapidly grow on SDA.

Treatment : Amphotericin B is the drug of choice as these groups of fungi are resistant to fluconazole, itraconazole and voriconazole.

Viral infections

HIV/ AIDS

It is caused by human immunodeficiency virus which results in marked reduction of CD4+T cells. These CD4+T cells have an important role in acquired immune response as these cells helps in production of specific T and B cell response (Innate immune response not affected). Thus as there is constant reduction of CD4+T cells, patient does not response well to the microbial pathogen.

Person suffering from HIV infection, get another infections as candidiasis (Oral/esophageal/ larygeal), repeated herpes simplex, herpes zoster infection, cryptococcal meningitis, pneumocystis pneumonia, CMV retinitis, tuberculosis.

AIDS (Acquired immunodeficiency syndrome) is a condition where patient present with multiple infection at one time. It is usually a terminal stage of HIV infection.

Mode of transmission

1. Sexual contact is most common cause.
2. Blood transfusion (most efficient way of HIV transmission) & needle prick injury.
3. Organ transplant
4. Perinatal transmission (Mother to baby) transmission occurs, mostly at the time of delivery.

Lab diagnosis

1. Antibody against the HIV virus is detected by ELISA/Immunochromatography test. This is the most commonly used method. But these antibodies may be absent in early phase of HIV infection (Window period) and in last terminal stage of HIV infection where marked deduction of CD4+T cells is observed.
2. P^{24} Antigen is useful in early stage (Window period) of HIV infection
3. PCR can be detected HIV virus even earlier than the P^{24} Antigen. It is specifically used in diagnosis of HIV infection in infants with < 6month of age.

Post exposure prophylaxis

If there is any needle prick injury to the health care person, then the health care person and patient, both should be evaluated for the presence of HIV infection and its severity of exposure. If there is highly suspicious of HIV transmission, PEP (Post exposure Prophylaxis) should be initiated within 72hrs of exposure.

Treatment : Antiretroviral drugs such as NRTI (Nucleoside Reverse Trans-criptase Inhibitor), NNRTI (Non- Nucleoside Reverse Transcriptase Inhibitor), PI (Protease Inhibitor) are commonly used.

Viral Hepatitis B

Hepatits B viral infection is characterized by low grade fever, malaise, weakness, loss of appetite, pain in right upper abdomen with yellowish discoloration of urine and eyes. Most of the acute

Hepatitis B infection cases (80%) are self limiting, very few converts into chronic hepatitis and very rarely converts into cirrhosis and hepatocellular carcinoma.

Mode of transmission

1. Blood transfusion / needle prick injury.
2. Organ transplant.
3. Perinatal transmission (Mother to baby) transmission occurs, mostly at the time of delivery.

Lab diagnosis

1. HBsAg detection (1st Antigen to be positive)
2. Anti HBC IgM (Marker of Acute infection)
3. AntiHBC IgG (Marker of Chronic Infection)
4. HBeAg (Marker of acute viral proliferation)
5. Anti HBs antibody (Marker of protective antibody)

Treatment : In acute Hepatits B infection, supporting treatment is major treatment whereas in chronic Hepatitis B infection, Interferon alpha and Rivavarin are used.

Post exposure prophylaxis

1. If there is any needle prick injury to the health care person, then the health care person are immunized with 0.5ml of Hepatitis B subunit vaccine (0,1,6 month) and Hepatitis B immunoglobulin.
2. Newborn baby with HBsAg positive mother should also receive 0.5ml of Hepatitis B subunit vaccine (0,1,6 month) and Hepatitis B immunoglobulin.

Hepatitis C infection

This viral infection is characterized by low grade fever, malaise, weakness, vomiting, loss of appetite, pain in right upper abdomen with yellowish discolouation of urine and eyes.

Most of the acute Hepatitis C infection cases (80%) convert into the chronic hepatits and may result in cirrhosis.

Mode of transmission

1. Blood transfusion/ needle prick injury
2. Organ transplant
3. Perinatal transmission (Mother to baby) transmission occurs, mostly at the time of delivery.

Lab diagnosis

Antibodies against NS3, NS4 are detected in serum. For early diagnosis, Real time PCR is done to determine the viral RNA copies in blood.

Treatment : Interferon alpha and Rivavarin are most frequently used in treatment.

Swine flu

Swine flu is caused by H1N1 strain of Orthomyxovirus. This virus primarily affects the upper respiratory tract. It spreads while coughing and sneezing. It remains alive on inanimate surface (hands, cloth, bed linen) for 7days. When a person comes in contact with infected droplets/ inanimate surface, person become infected and results in fever, malaise, running nose with cough. In newborn, pregnant ladies and adults with co-morbidities such as diabetic, chronic liver/kidney disease, alcoholic results in severe pneumonia which may lead to ARDS (Life threatening condition).

Lab diagnosis: Nasopharyngeal swabs are collected. Real time PCR is done to detect H1N1 in clinical samples.

Treatment : Oseltamivir (Tamiflu) is given in treatment of swine flu.

Poliomyelitis

Poliomyelitis is an acute lower limb paresis/ paralysis, caused by *Polio virus*. This virus primarily enters in human body after consumption of contaminated food and water. It enters in brain and affects the anterior horn cells of the spinal cord, resulting in paralysis of both lower limbs.

This disease has been eradicated from India. But there are chances that disease may emigrate from polio-endemic country such as Pakistan.

Lab diagnosis : Diagnosis is confirmed by detection of *Poliovirus* in stool sample of a child suffering from acute bilateral lower limb weakness (AFP surveillance).

Prevention : Live attenuated polio vaccine was main weapon for eradication of this infection. Now a day, along with 2 doses of OPV, 3rd injectable dose (Inactive Polio vaccine) is given as per National Immunization Schedule.

Parasitic Infections

Amoebiasis/Amoebic dysentery

Amoebiasis is caused by *Entamoeba histolytica*, a parasite. Amoebiasis is characterized by passage of blood-mucous mixed stool along with tenesmus (lower abdominal pain). Cyst of parasite enters in human after consumption of contaminated food and water. These cyst are converted into the trophozoite and results in formation of flask shaped ulcer in large intestine. In few circumstances, trophozoite enters into the liver and results in Amoebic liver abscess.

Diagnosis : Presence of trophozoite in freshly passed stool is a diagnostic of amoebic dysentery. Cyst is also present in stool.

Treatment : Albendazole is the drug of choice

Giardiasis

Giardiasis is caused by *Giardia lamblia*. Disease is characterized by passage of watery stool with fat malabsorption. Cyst of parasite enters in human after consumption of contaminated food and water. These cyst are converted into the trophozoite. These trophozoites adhere to intestinal mucosa and interefere in absorption.

Diagnosis : Presence of trophozoite in freshly passed stool is diagnostic of Giardiasis. Sometimes, Cyst are also observed in stool.

Treatment: Albendazole is the drug of choice.

Neurocysticercosis

Neurocysticercosis is the brain parenchymal lesion, caused by *Taenia soilum*. This disease is the most common cause of sudden onset of adult epilepsy.

Taenia solium usually resides in intestine where gravid eggs are released in stool. These gravid eggs are consumed by the human being. Eggs develop into the larvae in brain parenchyma & eyes and results in the formation of lesion, surrounded by granulomatous tissues. Later on, these lesions are calcified.

Clinical features : Lesion in the brain results in acute onset of adult epilepsy. It may also result in space occupying lesion.

Treatment: Niclosamide and steroids are the mainstays of treatment. In unresolved cases, surgery is performed.

Hydatid cyst

Hydatid cyst is caused by *Ecchinococcus granulosus*. It is characterized by development of larval stage in the liver. Patient usually complains of pain in right upper abdominal pain. If ruptured, may result in anaphylactic shock.

E. granulosus primarily affects the dog where it resides in intestine. Human gets infection after coming in contact with these infected dogs.

Diagnosis : USG is the mainstay of diagnosis. Kasoni test is performed to determine Type I hypersensitivity reaction.

Treatment : Surgery is the main stay of treatment.

Malaria

Malaria is caused by *Plasmodium*. It primarily affects the RBCs. Four species of *Plasmodium* causes malaria, among these species of *Plasmodium, vivax* and *falciparum* commonly causes infections in India.

Malaria is common cause of morbidity and mortality worldwide. *Pl. vivax* is the most common cause of malaria in India but higher mortality is seen with *Pl.falciparum* infection. Sporozoite stage of parasite enters in human body after biting by female anopheles mosquito. These sporozoites immediately enter in to the liver where these develop into the hepatic schizoint. After coming out of liver, they infect the RBCs and go under the cycle of trophozoite, schizoint and gametogony. Both male and female gametocyte are taken up by the female anopheles mosquito where they go under the ookinete, oocyst stages of development. Later on, sporozoite develops which accumulate in the salivary gland.

In *Plasmodium falciparum*, infections, all stages except trophozoite and gametocyte happen in the capillaries of internal organs that why complications as cerebral malaria are common in this infection. In *Plasmodium vivax*, relapse occurs due to presence of hypnozoites (merozoites in liver) whereas in *Plasmodium falciparum*, recrudescence is observed due to persistent parasite in the blood.

Clinical features : fever, Anemia and splenomegaly are the classical triad of malaria. Paroxymal fever including the three stages: high grade fever followed by chills & rigor followed by sweating. This fever event is known as tertiary fever as schizogony completes after 48hrs. In case of *Pl.vivax* & *falciparum*, these evens recur after an interval of 48 hrs.

Plasmodium falciparum causes life threatening complication in form of cerebral malaria, algid malaria, septicemic malaria and black water fever.

Lab diagnosis : Peripheral blood smear is prepared and stained by any one stain as Leishman, Giemsa, Field, JSB stain. In *Pl.vivax* infection, all stages including trophozoites, schizoints and gametes are seen whereas in *Pl.falciparum* infection, only early trophozoite and gametocyte stage are observed.

Antigen : Blood is collected in EDTA vial and plasmodium specific antigens are detected by rapid diagnostic kits such as Malaria paracheck. HRP2 Antigen is highly specific for *Pl.falciparum* whereas LDH is non-specific marker for Plasmodium spp.

Filariasis

Filariasis is caused by *Wucheria bancrofti* whose adult worm resides in the lymph nodes and lymphatic channels. It enters in human body after Culex mosquito biting which preferentially bites in night in between 10pm to 2am. After mosquito biting, 3rd stage microfilariae enters in the circulation and converts into the adult worm in lymph vessels. Adult worm results in lymphadentis and lymphangitis. Later on, chronic inflammation occur which leads to formation of an eosinophillic granuloma which further obstructs the flow of lymph vessels, resulting in lymphoedema of dependent tissues. Long lasting lymphoedema, lead to cutaneous thickening and scarring of the epithelium with finally leading to elephantiasis.

Lymphoedema primarily affects the dependant lower limb. In males, it also involve scrotum whereas in females, it may involve the mammary tissues.

Clinical feature : In initial stages, patients usually complain of high grade fever and pain in affected region with marked eosinophillia. Later on, patients complain of swelling in lower limb/ scrotum/mammary gland.

Diagnosis : Blood sample is collected in EDTA vial in between 10pm to 2am and sent for microbiological examination for presence of microfilariae.

DEC provocative test : In suspected cases of filariasis, 100mg DEC table (Diethylcarbazine) is given orally to the patient and after 30 minutes, blood is collected in EDTA vial. Blood is examined for the presence of microfilariae.

Ascariasis

Ascariasis is common parasitic infection in Indian children. *Ascaris* enter in human body after consumption of contaminated food and water containing embryonated egg. Adult worm resides in small intestine where it interfere in the absorption. Sometimes, *Ascaris* form a mass inside the lumen and manifest as intestinal obstruction.

Patient usually complains of abdominal pain, diarrhea, malabsorption sometime vomiting. In few conditions, *Ascaris* penetrate the intestinal mucosa and results in intestinal perforation (Medical emergency). Sometimes, migration of larvae through respiratory tract results in eosinophillic pneumonitis.

Lab diagnosis : Stool sample is collected and looked for the presence of adult worm or its egg.

Hook worm infestation

Hookworm (*Ancylostoma duodenale*) larvae enter in human body after piercing the intact skin. Larvae migrate through the cardio-pulmonary cycle and develop into the adult worm in the small intestine. It attaches to the intestinal mucosa through its hooks and constantly sucks the blood resulting in anemia.

Clinical feature : At the site of skin piercing, inflammatory lesions are found. Patients usually complain of abdominal pain and malabsoption with clinical feature of anemia as fatigue, weakness.

Lab diagnosis : Stool sample is collected and looked for the presence of adult worm or its egg.

Stool occult blood test is usually positive.

Clinical syndrome

Hospital acquired infection : Hospital acquired infection is the condition where patients get infection after 48hrs of admission in hospital. These infections are usually caused by drug resistant microbes, present in hospital environment. *Pseudomonas aeruginosa, Klebsiella pneumoniae, Escherechia coli* and *Enterococcus* spp are predominat among these microbes. There are four common hospital acquired infections

1. Urinary tract infection (UTI)
2. Blood stream infection (BSI)
3. Ventilator Associated Pneumonia (VAP)
4. Surgical site infection (SSI)

Urinary tract infection occurs especially in catheterized patients. Microbes initially colonise the catheter and later on infect the urinary bladder, resulting in Catheter associated Urinary tract Infection (CAUTI).

Blood stream infection usually occurs in patients in whom in-situ venous canula is placed. Skin Microbes as *Staphylococcus epidermidis* colonise the canula and enter in the blood stream, resulting in Catheter related blood stream infection (CRBSI).

Ventilator associated pneumonia usually occurs in patients in whom mechanical respiratory support is needed. In these situations, oral microbial flora directly enters in alveoli and may results in VAP. Acinetobacter baumanii, Pseudomonas aeruginosa, Klebsiella pneumoniae are the most common causes of morbidity and mortality in VAP cases.

Surgical site infection usually occurs at the site of expose especially after the surgical incision. *Staphylococcus aureus* is the most common cause of these SSI.

Diagnosis : In case of UTI, midstream urine sample should be sent for microbiology workup. There is no need to send the tip of Foley's catheter. In case of blood stream infection, blood culture should be sent. In a case of VAP, ET suction should be sent whose microbiology culture report should be evaluated on background of respiratory symptoms and radiological imaging. In a case of SSI, lesion should be cleaned with normal saline and tissue biopsy should be sent for microbiological workup.

PUO

PUO is the clinical condition where the etiology of fever (Temperature $\geq 38.3^{0}$C) is unknown despite one week of intensive investigation. Fever may be infectious or non-infectious in origin. Fever is quite common in neoplasm and connective tissue disorder as SLE, Rheumatoid arthritis. In India, enteric fever and malaria are two most common infectious causes of PUO.

Lab diagnosis : Routine examination like CBC, ESR, Peripheral blood film, urine, stool sample are sent. Blood is also sent for diagnosis of HIV, Hepatitis B, and Hepatitis C infection.

Urine, sputum, stool and blood culture are sent in microbiology lab.

10ml of Adult blood is withdrawn aseptically and inoculated in 50ml of BHI (Brain Heart Infusion) broth containing SPS. This BHI broth is sent to microbiology lab where it is kept at 37^{0}C in incubator.

STD

Sexually transmitted diseases are the transmissible disease which spread through the sexual activities. These diseases are common in younger population where both partners are infected. These diseases may be localized to affected area or may be disseminated. These infections usually present in form of discharge or ulcers at the site of exposure.

In HIV infected patients, higher prevalence of these STDs are seen. Similarly, the STDs patients are highly vulnerable for HIV infection.

STD infection presenting as discharge : *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomonas vaginalis* and *Candida albicans* usually present as discharge. In gonorrhea, milky white mucopurulent discharge in seen whereas in Chlamydia infection, serous discharge is commonly observed. Discharge usually occurs after the inflammation of urethra in male (urethritis) and cervix in female (Cervicitis). *Neisseria gonorrhoeae* is most common cause of discharge. Rest other etiologies are considered as non-gonococcal urethritis (NGU)

STD infection presenting as ulcer at the site of exposure : *Treponema pallidum* (Chancre), *Haemophillus ducreyi* (Chancroid), *Calmytobacterium granul-omatis* (Donovanosis), *Chlamydia trachomatis* (LGV) and *Herepes simplex* 2 & 1 (Herpes genitalis) usually results in ulcer at the site of contact.

In a case of chancre, single hard, painless, firm, nontender ulcer is seen with hard painless lymphadenopathy. In a case of chancroid, soft, painful, tender ulcer is present at the site of contact which easily bleeds on touch. Similar painful vesicular lesions are observed in *Herpes simplex* infection. In a case of donovanosis, painless ulcers are found but they don't result in any lymphadenopathy.

Diagnosis : In case of urethritis, urethral discharge is collected in a sterile container. In conditions, where discharge is not visual, charcoal laden swab are used to collect the urethral discharge. In a case of cervicitis, cervical discharge is collected with the help of spatula. Discharge is immediately sent to the microbiology laboratory and processed immediately.

To diagnose a case of *N.gonorrhoeae* infection, gram's stain is made. Presence of intracellular Gram negative cocci arranged in pairs is a diagnostic of gonococcal urethritis. In females, it is difficult to diagnose gonococcal urethritis on the basis of Gram's stain. Sample is directly inoculated on Chocolate agar.

To diagnose other infective agents as *Candida* and *Trichomonas*, immediately wet mount is prepared and trophozoite of *Trichomonas vaginalis* & yeast cells of *Candida* are observed. Sample is also inoculated on SDA agar for isolation of Candida.

For diagnosis of *Chlamydia trachomatis* urethritis/cervicitis, Nucleic Acid Amplification Test (NAAT) is performed although antigen can also be detected by direct immunofluroscent antigen test (DFA).

Diagnosis of GUD : Ulcer is cleaned with normal saline and exudates are removed. Only the tissue sample from base of the ulcer and serosanguinous fluid is sent for microbiological examination especially for Gram's stain and Giemsa stain.

In suspected cases of chancre, blood in plain vial (without Anticoagulant) is collected and sent for VDRL and TPHA test. In case of suspected LGV ulcers, tissue biopsy is sent for NAAT. In cases of Herpes genitalis, vesicle fluid is sent for PCR amplification. Concomitantly, serum is also sent for *Herpes simplex* antibody detection.

Meningitis

Meningitis is the life threatening even where inappropriate diagnosis and treatment may result in morbidity and mortality. Meningitis is the inflammation of the piamater and arachnoid layers which cover the brain parenchyma. Inflamed meningeal layers interfere in CSF absorption, resulting in increased CSF pressure.

Causative agent: Most of the causative agents of meningitis are capsulated organism as capsule prevents the phagocytosis. These microbes disseminate through the blood and cross the blood brain barrier and result in meningitis. In neonates, *Streptococcus agalactiae* is the most common cause of meningitis. In infants, *Streptococcus* *pneumoniae*, *N.meningitidis* and *H. influenzae* commonly causes meningitis whereas in adults, *Mycobacterium tuberculosis* and *S.pneumoniae* are causative agents in most of the cases of meningitis.

Clinical features: Fever, headache and vomiting are the classical triad of meningitis. These features may be preceded by upper respiratory tract infection. Meningitis may also lead to altered behavior, neck pain and failure to eat especially in infants. Neck rigidity is the cardinal sign of meningitis which is demonstrated by Kerning's and Brodezensky sign.

Lab diagnosis: CSF is collected aseptically by lumbar puncture. CSF is collected in three vials, one each vial for pathology (cell count), microbiology (culture, antigen detection, microscopy) and biochemistry (sugar, protein, chloride). For microbiological workup, CSF is centrifuged and supernatant & sediment are separated. Gram's stain and ZN staining are performed on smear made from sediment. Sediment is also inoculated on blood agar, chocolate agar and MacConkey agar. Supernatant is used to detect the capsular polysaccharide antigen. CSF report should be immediately informed to clinicians.

Urinary tract infection (UTI)

Inflammation of urinary tract (Kidney, ureter and urinary bladder) is known as urinary tract infection. UTI commonly infects young females and admitted patients with in situ Foley's catheter. This UTI is classified as

1. **Lower UTI :** It is the inflammation of the bladder. Microbes usually enter in the bladder through the urethra via the ascending route. Patient usually complains of lower abdominal pain, fever, urgency, frequency and burning micturation.
2. **Upper UTI :** It is the inflammation of kidney and ureter which is consequence of hematogenous microbial spread. In this condition, high grade fever and pain in loin occurs.

Most common bacterial pathogens

Escherichia coli, Enterococcus, Klebsiella pneumoniae, Pseudomonas aeruginosa, Proteus mirabilis, Staphylooccus saprophyticus in young sexually active females, *Candida*

Candida UTI is common in diabetic patients whereas *Pseudomonas aeruginosa* primarily infects the catheterized patients.

In pregnant females, bacteria are usually present in urine without any clinical features (Asymptomatic Bacteriuria). In these conditions, significant bacteriuria (10^5CFU/ml) is important.

Lab diagnosis : Mid stream (Middle portion of urine) clean catch urine is collected in a sterile container. Immediately, Urine sample is inoculated on CLED (Cystein lactose Electrolyte Deficient) Agar.

In upper UTI, blood culture is performed where 10ml of the patient blood is inoculated in BHI broth.

Diarrhea and Dysentery

Diarrhea and dysentery are the condition is which altered frequency and consistency of the feces is observed. In diarrheal cases, watery stool is usually observed whereas in dysentery cases, blood-mucous mixed stool with abdominal pain is observed. These diarrheal cases usually occur when intestinal mucosa fails to absorb the nutrients. Dysentery cases occur due to intestinal mucosal damage caused by either by the microbe itself or through the secreted toxin.

Causative agent of Diarrhea : *Vibrio cholerae, Salmonella Enteritidis, Giardia*

Causative agent of Dysentery : *Shigella, Entamoeba histolytica*

Lab diagnosis : Freshly passed stool sample is collected in a wide mouth sterile container and immediately sent for microbiological workup. Immediately saline and iodine wet mount are prepared and looked for the presence of pus cells, RBCs, microbes, trophozoite of Giardia lamblia & E.histolytica.

Stool sample is directly inoculated on macConkey and DCA agar. Simultaneously, stool sample is also inoculated in alkaline peptone water (for *Vibrio*) and GN broth (*Shigella*) for enrichment. After 6-8hrs, stool from enrichment broth is inoculated on selective media as TCBS for *Vibro* and SS agar for *Shigella*.

Treatment : Hydration should be maintained by fluids. Antibiotics should not be given.

Respiratory tract infection:

A) **Upper respiratory tract infection :** These infections primarily infect the throat, paranasal sinuses and middle ear cavities. Upper respiratory tract is colonized with microbes including non-capsulated strains of Streptococcus pneumoniae, viridians group of Streptococci, Coagulase negative staphylococci, diptheroids etc. These microbes interfere in attachment of the pathogenic microbe.

Causative agent : Most of the upper respiratory tract infections are caused by viruses as rhinovirus, adenovirus, influenza and parainfluenza virus. Bacteria especially *Streptococcus pyogenes* and *Corynebacterium diphtheriae* cause upper respiratory tract infection.

Clinical features : Patients usually complains of low grade fever, malaise, running nose, dry cough. In cases of *S.pyogenes* pharyngitis, patient usually complains of sore throat with dry cough. On examination of throat, inflamed oral mucosa along with multiple exudates on tonsillar crypts and posterior pharyngeal wall are observed. In cases of diphtheria, a white thick membrane on tonsillar crypts is formed which may extent posterior. On removal of this membrane, bleeding occurs.

Lab diagnosis : Throat swab is collected for diagnosis of bacterial pharyngitis. A cotton swab is taken and sample is collected from exudates, posterior pharyngeal wall and from both tonsillar fossa. Care should be taken, not to touch the tongue. Swab is directly inoculated on Blood agar immediately and kept at 37^0C. In cases of suspected diphtheria, white membrane should be sent for Gram's stain, Albert stain and culture. Culture is done on Loeffler serum slope and blood agar.

To diagnose viral etiology of pharyngitis, nasopharyngeal sample is collected. Charcoal coated swab is inserted along the floor of nasal cavity and at the end; swab is rotated twice to collect the secretion and sent for microbiological workup.

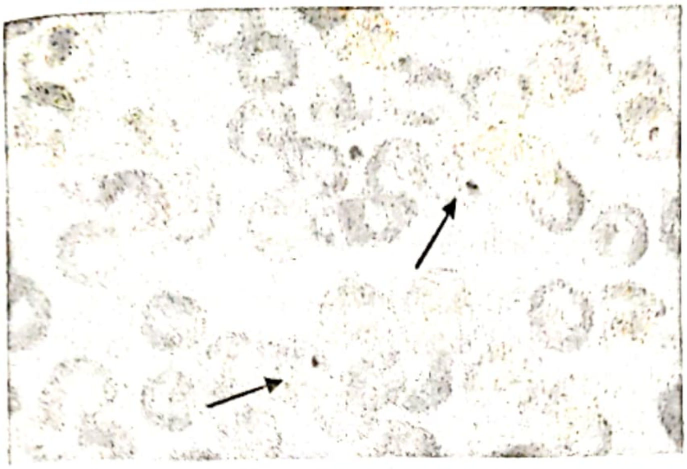
b) **Lower respiratory tract infection :** These infections primarily involve the alveoli, bronchi and bronchioles. These infections are common in alcoholic, smokers, chronic diseased persons as chronic liver and kidney disease. In most of the cases, there is bacterial etiology of acute exacerbation of COPD patients. Some patients present as pneumonia where alveoli are filled with microbes and inflammatory cells.

Etiology: Acute exacerbation of COPD is mostly caused by Non-capsulated strains of S.*pneumoniae, H.influenzae, Moraxella, Chlamydia pneumoniae.*

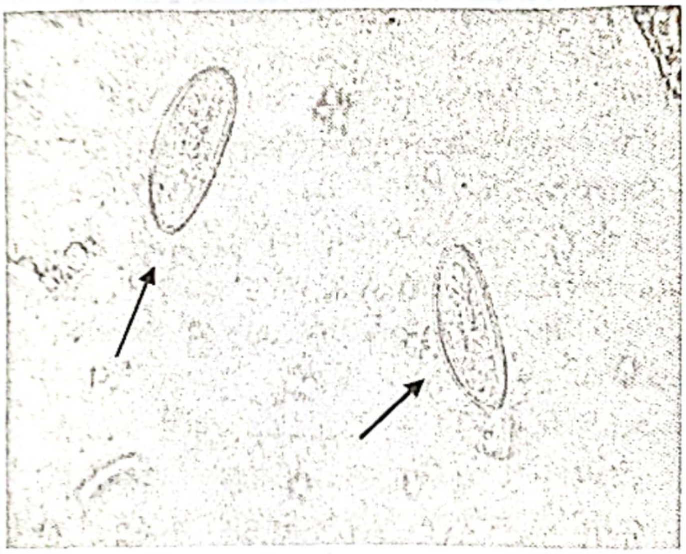
Pneumonia is caused by *Streptococcus pneumoniae* (Most common cause), *Haemophillus influenzae, Moraxella* and *Mycobacterium tuberculosis*. Other pathogens as *Klebsiella pneumonaie, Pseudomonas aeruginosa, Acinetobacter baumanii, Burkholderia* causes nosocomial pneumonia.

Clinical feature : In acute exaceberation of COPD cases, patients usually complain of worsening of breathlessness with low grade fever. In cases of pneumonia, patient usually complain of high grade fever, cough with sputum production, chest pain and breathing difficulty. Diagnosis and treatment is urgent as untreated cases may result in lung abscess and respiratory failure.

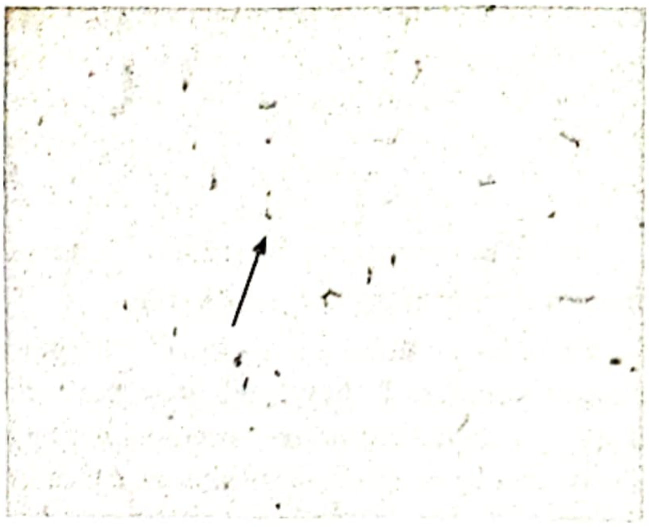
Lab diagnosis : Sputum is mostly prescribed sample. Early morning sample should be collected and sent immediately for microbiological workup. Gram's stain is made and examined for the presence of pus cells and pathogenic microbes. Sample is also inoculated on Blood agar, MacConkey and chocolate agar.



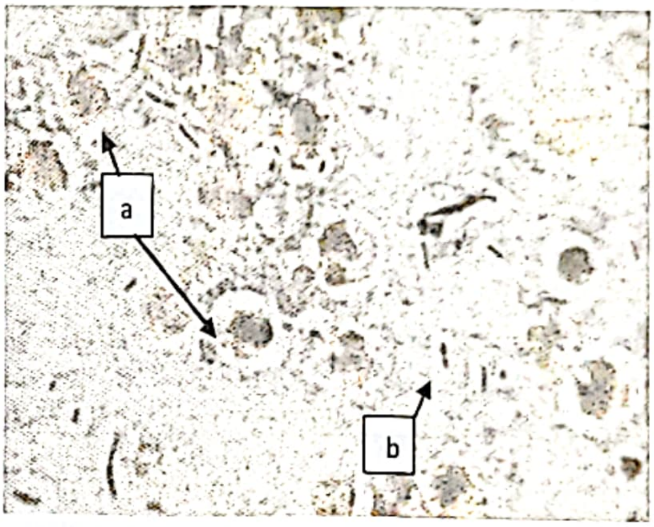
Plasmodium vivax infected RBCs



Eggs of Trichuris Trichiura in stool sample



Mycobacterium tuberculosis (marked) on ZN staining



Sputum Gram's stain showing presence of numerous pus cells (a) along with capsulated Streptococcus pneumoniae (b)

CHAPTER 24

Upadrava

परिभाषा (Paribhaṣa)

उपद्रवस्तु खलु रोगोत्तरकालजो रोगाश्रयो रोग एव स्थूलोऽणुर्वा रोगात् पश्चाज्जायत इत्युपद्रवसंज्ञः । *C.Ci 21/40*

One which occurs in the course of some other disease, althouth it may result from the main disease. This morbid process occuring during a disease may be a minor or major ailment. It is called *upadrava*.

Classification

Divided into two varieties namely

1. स्थूल उपद्रव (*Sthūla upadrava)* - Major complications

2. अणु उपद्रव (*Aṇu upadrava*) - Minor complications

रोगोत्तरकालज इति रोगमध्यकालजः - Later to the period of disease termed as complication.

रोगसहोत्पन्नस्य लिङ्गस्य व्यवच्छेदः - The symptoms gets manifested along with disease.

रोगाश्रय इति रोगारम्भकदोषप्रकोपजन्यतया रोगेण समं तुल्यकारणः - The symptoms transmitted the involved prime *Doṣa*.

गलगण्डे जाते स्वहेतूत्पन्नानां ज्वरादीनां रोगोत्तरकालजानामप्युपद्रवत्वं निषेधयति - *Galagaṇḍa* gets manifest by its etilogocal factors and *Jvara* gets manifest as an complication.

तेन व्याध्यवस्थाया रोगोत्तरकालजाया व्यवच्छेदं करोति - Here *roga* term is mentioned specially, *Upadrava* is continued with disease in later stage.

व्याधितस्य व्याध्युत्पत्तेःपश्चादुत्पद्यमानः क्लेशजनको भवति - रोग अवस्था - The successive stage of disease is not actully termed as *Upadrava* (complication).

व्युदासः - पृथक्करण - That separates.

तथा सर्वासामपि व्याध्यवस्थानामवस्थालक्षणयुक्तानां व्युदासः कृतो भवति - All disease are categories by considering *Vyādhi, Sthāna, Avasthā* and *Lakṣaṇa*.

अवस्था व्याधेरवश्यम्भावितया मूलव्याधिस्वरूपा एव, उपद्रवस्तु नावश्यं भवति - The stage of disease always related with the prime disease.

यद्यपि केचिन्महाबलदोषारब्धा व्याधय उपद्रवयुक्ता एवोत्पद्यन्ते - Few *doṣa* were more strengthen and favoring to produce *upadrava* along with main symptoms of the disease.

सहोत्पन्ने चोपद्रवाथी नास्ति - The disease originated along with merely not termed as *Upadrava.*

तत्रौपसर्गिको नाम यः पूवीत्पन्नं व्याधिं जघन्यकालजातो व्याधिरुपसृजति स तन्मूलएवोपद्रवसञ्ज्ञः (सु.सू.अ.35) - As an association of prime disease the manifestation of complication occur.

तत्र, उपद्रवो रोगारम्भक दोषप्रकोपजन्योऽन्यविकारः । *M.Ni 1/2 (Madhukoṣa)*

It is the morbid event which develops by the factors which are responsible for the manifestation of main disease. It may be due to excessive aggravation of *doṣa, duṣya* etc.

व्याधेरुपरि यो व्याधिर्भवत्युत्तरकालकः ।
उपक्रमाविरोधी च स उपद्रव उच्यते ।

M.Ni 1/2 (Madhukoṣa)

It is an episode which develops after the manifestation of main disease and subsides by giving treatment to main disease. Treatment is not antagonistic to main disease.

औपसर्गिक नाम यः पूर्वोत्पन्नं व्याधिं जघन्यकालजातो व्याधिरुपसृजति, स तन्मूल एवोपद्रव सज्ञः । *S.Su 35/18*

The word *aupasargika* used here as synonym to *upadrava*. It denotes that disease which manifests upon another disease is called *upadrava* and it manifests due to the same factors which are responsible for the manifestation of main disease.

उपद्रवः संज्ञानिरुक्तिः पश्चाज्जायत इति व्याध्युत्पाद समीपे उपद्रवतीति उपद्रव इति निरुक्तेः ।

C.Ci 21/40 (Cakrapāṇi)

Upadrava means which manifest after the genesis of main disease. This episode has been super imposed, altering symptoms and modifying its course as a result disease may become difficult for management. Which is very close to main disease. It manifests after the main disease or during the disease process, if powerful cause supersedes. *Cakrapaṇi* says that the signs and symptoms of a disease which appear at different stages, especially, at the later stage of the disease should be considered as the signs and symptoms of the original disease and not as complications. Different stages of a disease are invariably manifested during the process of pathogenesis and all these stages constitute a disease, but *upadravās* may or may not be manifested which represent a distinct stage of development in a disease. But if a disease manifest by powerful *doṣas, duṣyas* etc. then it is possible that the ailments which constitute *upadrava* may also get manifested right from the inception of the disease.

तत्र प्रधानो व्याधिः व्याधेर्गुणभूत उपद्रवः, तस्य प्रायः प्रधानप्रशमे प्रशमो भवति। स तु पीडाकरतरो भवति पश्चादुत्पद्यमानो व्याधिपरिक्लिष्ट–शरीरत्वात्; तस्मादुपद्रवं त्वरमाणोऽभिबाधते। *C.Ci 21/40*

It is called *upadrava* because it develops after the genesis of original disease. Original disease is predominant, upadrava ocurs secondary to it. It generally subsides once the main disease cured. It modifies the course of the disease leading to worse condition because it is manifested in the body of the patient which is already debilitated due to affliction by main disease. Therefore treatment must be initiated instantaneously to alleviate *upadrava.*

Complications

- Complications are not to be confused with sequelae, which are residual effects that occur after the acute (initial, most severe) phase of an illness or injury. Sequelae can appear early in the development of disease or weeks to months later and are a result of the initial injury or illness. For example, a scar resulting from a burn or dysphagia resulting from a stroke would be considered sequelae.
- In addition, complications should not be confused with comorbidities, which are diseases that occur concurrently but have no causative association. Complications are similar to adverse effects, but the latter term is typically used in pharmacological contexts or when the negative consequence is expected or common.
- Unfavourable result of a disease, health condition, or treatment is known as medical complication and it may adversely affect the prognosis and outcome of a disease.
- It indicates a worsening and severity of disease
- It also indicates the development of new clinical features or pathological events and these changes may become widespread throughout the body and affect other organ systems.
- It may lead to the development of new diseases resulting from a previously existing disease.
- Complications may also arise as a result of various treatment modalities
- The development of complications depends on a number of comorbid factors, including the degree of vulnerability, susceptibility, age, health status, and immune system condition.
- Knowledge of the most common and severe complications of a disease, procedure, or treatment allow for prevention and preparation for treatment if they should occur.
- Complications should not be confused with comorbidities, which are diseases that occur concurrently but have no causative association.

Note – Comorbidity is the presence of one or more additional conditions co-occurring with a primary condition and additional comorbidities within a patient may also be behavioral or mental disorders.

- Complications are not to be confused with sequelae, which are residual effects that occur after the acute (initial, most severe) phase of an illness or injury.

Sequelae

- Sequelae is a pathological condition resulting from a disease, injury, therapy, or other trauma and it is a chronic condition that is a complication which follows a more acute condition.

- It can appear early in the development of disease or weeks to months later and are a result of the initial injury or illness. For example, a scar resulting from a burn or dysphagia resulting from a stroke would be considered sequelae.

Common Illnesses and Complications

Iatrogenic Complications

Medical errors can fall into various categories listed below:

- **Medication:** Medication medical errors include wrong prescription, impaired delivery, or improper adherence.
- **Surgical:** Surgery-related medical errors can be anesthesia-related, but most often include wrong-site and wrong-patient procedural errors.
- **Diagnostic:** Diagnostic errors include misdiagnosis, wrong diagnosis, and over diagnosis.
- **Machine interface:** Errors in this category refer to mistakes in human interaction with tools or machines..
- **Transition and handoff**: Errors in this category can occur person-to-person or site-to-site during transfer, and can be managed by adhering to proper hand-off protocols.
- **Human factors, teamwork, and communication**: Errors in this category highlight the impact of culture and relationships on communication.
- **Healthcare-associated infections (HAIs):** HAIs are complications of general treatments involving microorganisms or viral infections and are most commonly caused by indwelling devices (urinary catheters, central lines) or previous surgical procedures.

Cardiovascular Complications

Atrial Fibrillation

- Atrial fibrillation is a type of arrhythmia characterized by rapid and irregular heart rhythms due to irregular atrial activation by the atrioventricular (AV) node.
- Thrombosis in the heart or brain, causing stroke or acute myocardial infarction can be complications of blood coagulation disorders, phlebitis (inflammation of the veins), endocarditis and artificial heart valves.

Metabolic Complications

Diabetes Mellitus

Diabetes mellitus may present a series of complications in an advanced or more severe stage, such as:

Cardiovascular disease: Diabetes is associated with risk factors for various cardiovascular diseases including obesity, insulin resistance, hyper triglyceridemia, hyperlipidemia, dyslipidemia and hypertenson.

high blood cholesterol and triglyceride content, and high blood pressure.

These conditions increase risk of thrombosis, atherosclerosis (blockage of coronary arteries leading to inadequate supply of oxygen to parts of the heart), and hypertension which can lead to myocardial infarction, coronary artery disease (CAD), and others.

Diabetic Neuropathy: Hyperglycemia can eventually cause damage to nerves in the distal extremities (peripheral neuropathy), thighs and hips (radiculoplexus neuropathy), face (mononeuropathy), and internal organs (autonomic neuropathy).

Diabetic Nephropathy: Excessive amounts of certain solutes passing through the kidneys for prolonged periods of time can lead to kidney damage.

Diabetic Retinopathy: Chronic or prolonged type I and type II diabetes can lead to damage in the blood vessels of the retina due to hyperglycemia (excessive blood glucose). Damage and blockage of the vessels causes microaneurysms, tears, and leakage of fluid into the back of the eye.

Foot damage: Diabetes mellitus can lead to poor vascular blood flow to the extremities. Injury of the foot with inadequate blood flow can progress to ulcers and become infected. Individuals with diabetic neuropathy may not notice the damage and may develop gangrene (tissue necrosis due to inadequate blood supply).

Skin conditions: Insulin insensitivity in the case of type II diabetes can cause prolonged increases in blood insulin. Insulin normally binds to insulin receptors but in excess amounts may bind to insulin-like growth factor (IGF) receptors in epithelial tissue. This can cause excessive proliferation of keratinocytes and fibroblasts. This presents as acanthosis nigricans, a thickening and darkening of areas of the skin such as the armpits, necks, hands, and face. Other skin conditions include diabetic dermopathy, digital sclerosis, eruptive xanthomatosis, and others.

Neurologic/Psychiatric Complications

- Hepatic encephalopathy is a possible complication of liver cirrhosis.
- Significant intellectual, physical, and developmental disability are common complications of untreated hydrocephalus.
- Suicide is a common complication of many disorders and conditions that consistently affect a person's life negatively, such as major depressive disorder, post traumatic stress disorder, schizophrenia, anxiety disorders, or substance abuse.

Reproductive Complications

Pregnancy

- **Hypertension:** The developing fetus enlarges in the mother's womb, placing pressure on the arteries and vasculature of the mother. This causes a reduction in blood flow and a systemic increase in blood pressure. If the mother had high blood pressure prior to and after pregnancy it is considered chronic hypertension; if it occurs after 20 weeks of gestation or pregnancy, it is gestational hypertension. A previously hypertensive mother who shows signs of gestational hypertension can lead to preeclampsia, a more severe case which can be detrimental to the mother and developing fetus.
- **Gestational diabetes:** An appropriate level of blood sugar is typically maintained by insulin secretion from the pancreas. During pregnancy the placenta surrounding the developing fetus produces hormones that can inhibit the action of insulin, preventing the mother's blood sugar from decreasing. Occurs primarily in the second half of pregnancy and can cause excessive birth weight, preterm delivery, and place the child at greater risk for type II diabetes.
- **Preterm labor:** Delivery of the baby prior to 37 weeks of pregnancy is considered preterm. This can cause a variety of issues with the child including underdeveloped viscera (organs), behavioral or learning disabilities, low birth weight, and respiratory issues.
- **Miscarriage:** The loss of the developing fetus prior to 20 weeks of pregnancy. Common causes may be related to chromosomal abnormalities (abnormal genetic makeup) of the fetus but can also include ectopic pregnancy, maternal age, and other factors.
- **Stillbirth :** The loss of the developing fetus after 20 weeks of pregnancy. Can be due to a variety of reasons including chromosomal abnormalities, developmental issues, or health-related problems of the mother.
- **Hyperemesis Graviderum:** Persistent, acute nausea throughout pregnancy that does not go away after the 1st trimester. Different from morning sickness which is more common and less severe.

Respiratory Complications

Streptococcal Pharyngitis

Streptococcal pharyngitis, also known as strep throat, is an infection of the respiratory tract caused by group A Strep, *Streptococcus pyogenes*, a gram-positive, cocci, beta-hemolytic (lyses blood cells) bacteria. In many of these, lack of treatment and the body's immune response is responsible for the additional adverse reactions. These include:

- **Scarlet fever:** In addition to the symptoms of strep throat, individuals may experience increased a red rash, increased red tone, and strawberry tongue. The prominent rash generally fades after a few days and may peel for a few weeks. Treatment is the same as for strep throat.
- **Rheumatic fever :** Rheumatic fever generally develops a few weeks after symptoms of strep throat have passed and is less likely to develop if prompt treatment (antibiotics) is given. Rheumatic fever may lead to more serious complications of the heart such as rheumatic heart disease.
- **Glomerulonephritis:** Onset of kidney damage that may present a few weeks after strep infection. Rather than being a direct result of infection in the kidneys.
- **Otitis media:** Infection of the middle ear.
- **Meningitis:** Infection of the meninges of the central nervous system (brain and spinal cord) that leads to swelling.
- **Toxic shock syndrome:** A severe reaction of the body to toxins produced by various bacteria such as Streptococcus pyogenes.

Surgical/Procedural Complications

- Puerperal fever was a common complication of childbirth, contributing to the high mortality of mothers before the advent of antisepsis and antibiotics.
- Erectile dysfunction and urinary incontinence which may follow prostatectomy.
- Malignant hyperthermia can be a reaction to general anesthetics, as a complication in a surgery.
- Fractured ribs and sternum may be a complication of cardiopulmonary resuscitation attempts.

Other Examples of Complications

- **Sepsis** (infection of the blood) may occur as a complication of a bacterial, viral, or fungal infection.
- **Miscarriage** is the most common complication of early pregnancy.
- **Eczema vaccinatum** is a rare and severe complication of smallpox vaccination in people with eczema

Adverse effect

- It is an undesired harmful effect resulting from a medication or other intervention, such as surgery.
- An adverse effect may be termed a "side effect", when judged to be secondary to a main or therapeutic effect.
- If it results from an unsuitable or incorrect dosage or procedure, this is called a medical error and not a complication.
- Adverse effects are sometimes referred to as "iatrogenic" because they are generated by a physician/treatment.
- Some adverse effects occur only when starting, increasing or discontinuing a treatment.
- Using a drug or other medical intervention which is contraindicated may increase the risk of adverse effects.
- Adverse effects may cause complications of a disease or procedure and negatively affect its prognosis.
- It may also lead to non-compliance with a treatment regimen.
- Adverse effects of medical treatment resulted in deaths
- The harmful outcome is usually indicated by some result such as morbidity, mortality, alteration in body weight, levels of enzymes, loss of function, or as a pathological change detected at the microscopic, macroscopic or physiological level.
- Adverse effects may cause a reversible or irreversible change, including an increase or decrease in the susceptibility of the individual

to other chemicals, foods, or procedures, such as drug interactions.

Adverse event (AE)

- An adverse event (AE) is any untoward medical occurrence in a patient or clinical investigation subject administered a pharmaceutical product and which does not necessarily have a causal relationship with this treatment.
- It can be any unfavourable and unintended sign (including an abnormal laboratory finding), symptom, or disease temporally associated with the use of a medicinal (investigational) product, whether or not related to the medicinal (investigational) product.

Types of adverse events

- All clinical trials have the potential to produce AEs.
- AEs are classified as serious or non-serious; expected or unexpected; and study-related, possibly study-related, or not study-related.

Unfavourable consequence of a disease, health condition, or treatment is termed as complication. It may adversely affect the prognosis, or outcome, of a disease. It generally involves a worsening in the severity of the disease or the development of new signs, symptoms, or pathological changes that may become widespread throughout the body and affect other organ systems. Thus, complications may lead to the development of new diseases resulting from previously existing diseases. Complications may also arise as a result of various treatments.

The development of complications depends on a number of factors, including the degree of vulnerability, susceptibility, age, health status, and immune system condition. Knowledge of the most common and severe complications of a disease, procedure, or treatment allows for prevention and preparation for treatment if they should occur.

CHAPTER 25

Arishta

नियतमरणव्यापकं लिङ्गमरिष्टं ।
M.Ni 1/2-3 (Madhukoṣa)

Appeared symptoms which indicate the definite death of the patient is called *ariṣṭa.*

फलाग्निजलवृष्टीनां पुष्पधूमाम्बुदा यथा ।
ख्यापयन्ति भविषत्वं तथा रिष्टानि पञ्चताम् ।
S.Su 28/3

By seeing flower, smoke and cloudy weather one can expect fruit, fire and rain respectively. In the same way certain symptoms appear before the death of the patient is called *riṣṭa.*

तानि सौक्ष्म्यात् प्रमादाद्वा तथैवाशु व्यतिक्रमात् ।
गृह्यन्ते नोद्गतान्यज्ञैर्मु मूर्षोनं त्वसंभवात् ।
ध्रुवं तु मरणं रिष्टे । *S.Su 28/4-5*

Some times *riṣṭās* are not recognised by unintelligent *vaidya* due to their minuteness or misunderstanding or by carelessness because *ariṣṭa* develops instanteneously before the death of an individual. Once the symptoms developed death is certain.

पुष्पं यथा पूर्वरूपं फलस्येह भविष्यतः ।
तथा लिङ्गमरिष्टाख्यं पूर्वरूपं मरिष्यतः ।
C.I 2/3

Flower indicates the forthcoming fruit. In the same manner appearance of particular symptoms anticipate imminent death of the patient.

अप्येवं तु भवेत् पुष्पं फलेनानुबन्धियत् । फलं चापि भवेत् किञ्चिद्यस्य पुष्पं न पूर्वजम् । न त्वरिष्टस्य जातस्य नाशोऽस्ति मरणादृते मरणं चापि तन्नास्ति यन्नारिष्टपुरःसरम् । *C.I 2/4-5*

Some flowers may not followed by a fruit. Sometimes fruit may be seen without flower. But once symptoms appear indicative of *ariṣṭa,* death is certain. Death may not be there in the absence of *ariṣṭa.*

अरिष्टं नास्ति मरणं दृष्टरिष्टं च जीवितम् ।
अरिष्टे रिष्टविज्ञानं न च रिष्टेऽप्यनैपुणात् ।
C.I 5/2

Without *ariṣṭa* death is not certain and person will die after its appearance. Unskilled and improperly trained physician fails to identify the features of imminent death.

अरिष्टान्यत्र मरणलक्षणानि । *S.Su 28/2-3 (Dalhaṇa)*

Ariṣṭa indicates the definite death of the patient.

क्रियापथमतिक्रान्ताः केवलं देहमाप्लुताः ।
चिन्हं कुर्वन्ति यद्दोषास्तदरिष्टं निरुच्यते ॥
C. I. 11/28

The signs produced by the vitiated *doṣās* which have transcended the sphere of treatment and pervaded all over the body are known as *ariṣṭa.*

रिष्टाभास (Riṣṭābhāsa)

दोषाणामपि बाहुल्याद्रिष्टाभासः समुद्भवेत् । *A.Hr.Śā 5/3*

Greatly excacerbated *doṣās* manifest powerful symptoms resembling that of *ariṣṭa* but they are not *ariṣṭa* is called *riṣṭābhāsa* and these subside by pacifying *doṣās.*

रिष्टाभावः (Riṣṭābhāva)

रुपेन्द्रियस्वरच्छाया प्रतिच्छायाक्रियादिषु ।
अन्येष्वापि च भावेषु प्राकृतेष्वनिमित्ततः ।
विकृतिर्वा समासेन रिष्टं तदिति लक्षयेत् ।
A.Hr.Śā 5/4-5

Certain factors like *rupa* (appearance, size, shape, colour etc.), *Indriya* (sense organs), *svara* (voice), *chāya* (complextion), *pratichāya* (image), *kriyā* (functions) etc. change their normal functions and become abnormal without any apparent cause is known as *ariṣṭa.*

अरिष्ट भेद (Classification of Ariṣṭa)

नियतानियते भेदेन द्विविध मरिष्टं उच्यते, पुष्पाम्बुदौ हेतु फलजलवृष्ट्योर्ज्ञा पकावनियतौ, न ह्यवस्यं कारणेन कार्यं कर्तव्यमेव; इत्यनेनानियतदृष्टान्तेन दूता दिनिमित्तजमरिष्टमनियतमुक्तं ।
S.Su 28/2-3 (Dalhaṇa)

Dalhaṇa classified *ariṣṭa* into two kinds namely *niyata* and *aniyata. Niyata* means definite event leading to death. For example smoke leads to fire, it is *niyata ariṣṭa*. *Aniyata* refers to indefinite event about the future event leading to death. For example flower and cloud are indefinite because it may not end in fruit and rain always. *Ariṣṭa* produced by messenger, omens are also indefinite signs of death.

केचित्त तद्विधेत्याहुः स्थाय्यस्थायि विभेदतः ।.....स्थाय्यवश्यं तु मृत्यवे । *A.H.Śā 5/3-4*

Riṣṭa is of two varieties i.e. *sthāyi* (permanent) and *asthāyi* (temporary). *Asthāyi riṣṭa* is temporary manifestation develops due to excessively excacerbated *doṣās* and subside by mitigating *doṣās*.

Sthāyi ariṣṭa indicates definite death of the patient.

तत्र तु खल्वेषां परीक्ष्याणां कानिचित् पुरुषमनाश्रितानि, कानिचित् पुरुष संश्रयाणि । तत्र यानि पुरुषमनाश्रितानि तान्युपदेशतो युक्तितश्च परीक्षेत्, पुरुषसंश्रयाणि पुनः प्रकृतितो विकृतितश्च । *C.I 1/4*

It is of two kinds namely *puruṣamanāśṛta and puruṣa samśṛayāṇi. Puruṣamanāsṛta* are not related to the patients and are to be understood by authoritative statements and rational thinking. *Puruṣasaṁṛayāṇi* are observed in patient and can be ascertained by normal constitution and morbid dispositions.

तत्र प्रकृतिर्जातिप्रसक्ता च, कुलप्रसक्ता च, देशानुपातिनी च, कालानुपातिनी च, वयोऽनुपातिनी च, प्रत्यात्मनियता चेति । जातिकुलदेशकालवयः प्रत्यात्मनियता हि तेषां तेषां पुरुषाणां ते ते भावविशेषा भवन्ति । *C.I 1/5*

Normal consitution is of six categories depending upon its distinctive features–

1. *Jāti* (caste)–e.g. purity among *Brāhmaṇās*
2. *Kula* (family)–e.g. purity in character and conduct
3. *Deśa* (place)–e.g. purity observed among people of *antarvedi* region.
4. *Kāla* (time)–e.g. purity observed in *satyayuga.*
5. *Vaya* (age)–e.g. impurity observed in childhood.
6. *Pratyātma niyatā* (individuality)–e.g. purity rarely observed in some individuals.

विकृति (Vikṛti)

Morbid dispositions is subdivided into three subtypes namely.

विकृतिः पुनर्लक्षणनिमित्ता च, लक्ष्य निमित्ता च, निमित्तानुरुपा च । *C.I 1/6*

- *Lakṣaṇa nimittā* (Bodily marks)
- *Lakṣya nimittā* (Etiological factors)
- *Nimittānurupa* (Resemble the etiological factors)

लक्षण निमित्ता (Lakṣaṇa nimittā)

तत्र लक्षणनिमित्ता नाम सा यस्याः शरीरे लक्षणान्येव हेतुभूतानि भवन्ति दैवात्; लक्षणानि हि कानिचिच्छरीरोपनिबद्धानि भवन्ति, यानि हि तस्मिस्तस्मिन् काले तत्राधिष्ठानमासाद्य तां तां विकृतिमुत्पादयन्ति । *C.I 1/6 (1)*

Lakṣaṇanimittā manifest due to past deeds and develops certain bodily marks which indicates morbid conditions. Such conditions e.g. attainment of empire, wealth, assasination, imprisonment etc. are no doubt indicated by bodily marks like the sign of lotus etc. Certain bodily marks are fixed in some body parts and develop as a morbid condition in favourable times in certain situations. So these bodily marks are considered as causative factors for such morbid conditions in a secondary sense.

लक्ष्यनिमित्ता (Lakṣya nimittā)

लक्ष्यनिमित्ता तु सा यस्या उपलभ्यते निमित्तं ययोक्तम् निदानेषु । *C.I 1/6 (2)*

Morbid conditions caused by etiological factors is described in *Nidāna*, *Sūtra* and *Cikitsāsthāna* etc. is known as *lakṣya nimittā*. For example :

- Etiological factors described for each and every disease
- Etiological factors for aggravation of *doṣa*, *dhātu* etc. described

निमित्तानुरुपा (Nimittānurupa)

निमित्तानुरुपा तु निमित्तार्थानुकारिणी या, तामनिमित्तां निमित्तमायुषः प्रमाण ज्ञान स्येच्छन्ति भिषजो भूयश्चायुषः क्षयनिमित्तां प्रेतलिङ्गानुरुपां, यस्मायुषोऽन्तर्गतस्य ज्ञानार्थमुपदिशन्ति धीराःयां चाधिकृत्य पुरुषसंश्रयाणि मुमूर्षतां लक्षणान्युपदेक्ष्यामः । इत्युद्देशः । *C.I 1/7*

These are not etiological factors in real sense but resemble them in effects. It is known as *nimittānurupa.* This will serve as a yard stick to measure the span of life. Particularly the signs of imminent death as a result of the diminution of the span of life. That's why more stress has been given to this. It is the duty of the physician to have a thorough knowledge of this to ascertain the span of life of an individual otherwise it becomes very difficult phenomenon. Such descriptions are widely described in *Caraka Indriyasthāna.*

The following factors must be taken into consideration by the physician desirous of ascertaining remaining span of life by *pratyakṣa* (direct observation), *anumāna* (inference) and *upadeśa* (scriptual testimony or authoritative statements) are as follows. *C.I 1/3*

1. वर्ण *(Varṇa)*–Complexion
2. स्वर (*Svara*)–Voice
3. गन्ध (*Gandha*)–Smell
4. रस (*Rasa*)–Taste
5. स्पर्श (*Sparśa*)–Touch
6. चक्षु (*Cakṣu*)–Visual organ
7. श्रोत्र (*Śṛotra*)–Auditory organ
8. घ्राणं (*Ghrāṇaṁ*)–Olfactory organ
9. रसन (*Rasana*)–Gustatory organ
10. स्पर्शन (*Sparśana*)–Tactile organ
11. सत्व (*Satva*)–Mind
12. भक्ति (*Bhakti*)–Inclination
13. शौचं (*Śaucam*)–Purity
14. शीलं (*Śīlam*)–Conduct
15. आचार (*Ācāra*)–Redefined behaviour
16. स्मृति (*Smṛti*)–Memory
17. आकृति (*Ākṛti*)–Shape
18. प्रकृति (*Prakṛti*)–Normalcy
19. विकृति (*Vikṛti*)–Morbidity
20. बल (*Bala*)–Strength
21. ग्लानि (*Glāni*)–Exhaustion
22. मेधा (*Medhā*)–Intelligence
23. हर्ष (*Harṣa*)–Exhilaration
24. रौक्ष्य (*Raukṣya*)–Roughness
25. स्नेह (*Sneha*)–Unctousness
26. तन्द्रा (*Tandrā*)–Drowsiness
27. आरम्भ (*Ārambha*)–Onset
28. गौरव (*Gaurava*)–Heaviness (severe)
29. लाघव (*Lāghava*)–Lightness (mild)
30. गुण (*Guṇa*)–Attributes or qualities
31. आहार (*Āhāra*)–Diet
32. विहार (*Vihāra*)–Activities
33. आहार परिणाम (*Āhara pariṇāma*)–Digestion of food
34. उपाय (*Upāya*)–Management
35. अपाय (*Apāya*)–Disappearance of disease
36. व्याधि (*Vyādhi*)–Characteristic feature of the disease
37. व्याधि पूर्वरूप (*Vyādhi pūrvarupa*)–Prodromal symptoms of the disease
38. वेदना (*Vedanā*)–Pain
39. उपद्रव (*Upadrava*)–Complication
40. छाया (*Chāyā*)–Lustre
41. प्रतिच्छाया (*Praticchāya*)–Shadow
42. स्वप्नदर्शन (*Svapnadarśana*)–Dreams
43. दूताधिकार (*Dūtādhikāra*)–Messenger
44. पथि चौत्पातिकं (*Pathi cautpātikam*)–Bad omens seen by the physician on his way to patient house
45. आतुरकुले भावावस्थान्तराणि (*Āturakule bhāvāvasthāntarāṇi*)–Bad omens observed in patient residence
46. भेषज संवृत्ति (*Bheṣaja saṁvṛtti*)–Administration of proper therapy
47. भेषजविकारयुक्ति (*Bheṣaja vikāra yukti*)–Observation of effect of medicine in patient

वर्ण (Complexion)–Indicating Ariṣṭa C.I 1/10

Change in body complexion i.e. half of the body may have natural complexion and other half may have abnormal complexion, which has been clearly demarcated.

Appearance of natural and unnatural complexions may simultaneously appear in face and other parts of body.

Other factors related to Varṇa (Complextion) indicating Ariṣṭa. C.I 1/12-14

Appearance of either *piplu* (port wine mark), *vyaṅga* (freckles), *tilakālaka* (black mole) and *piḍaka* (pimples) in the face of the patient.

Observation of change in colour i.e. blue, grey, coppery, green, white in nails, eyes, face, urine, stool, hands, legs and lips along with diminution of strength, complexion and sensory perception.

Sudden and abnormal appearance of abnormal complexions along with general weakness without any apparent cause.

ग्लानि (Glāni), हर्ष (Harṣa), रौक्ष्य (Raukṣya) and स्नेह (Sneha) indicating Ariṣṭa

Same as like that of complextion *C.I 1/11*

स्वर (Voice) indicating Ariṣṭa C.I 1/14-15

Sudden appearance of abnormal types of voice, mixture of various voices or if voice is like that of sheep (or wild goat), feeble voice, inaudible, indistinct, choaked, hoarsenessness, poor and stammering voice.

गन्ध (Smell) indicating Ariṣṭa C.I 2/8-16

One who emits constant fragrance resembling that of various flowers like a blossomed forest with many trees and creepers full of flowers is known as *puṣpita* (flowered), this indicates person will die within a year.

Person who emits fragrance similar to that of individual flowers, pleasant or unpleasant indicates *ariṣṭa.*

If physician percieves unpleasant odours collectively or individually.

Even after bath, application of fragrant unguentum and sprinkling of pleasant odour, person emits desirable or undesirable smells alternatively without any apparent cause.

If person emits smell like that of urine, faeces, dead body, all are unpleasant smell.

रस (Taste) indicating Ariṣṭa C.I 2/17-22

This can be understood by inference. The taste of the human being gets two types of changes before the death of an individual i.e. one is bitter taste or in the form of extreme sweetness. In case of bitter taste flies, lice, wasps and mosquitoes get away from the body having an abnormal taste. But in case of sweetness, flies are attracted constantly even after he has taken bath and applied cosmetics.

स्पर्श (Touch) indicating Ariṣṭa C.I 3/4

The following points indicate the *ariṣṭa* by touch.

- Absence of pulsation in pulsating areas
- Coldness in those which normally remain constantly hot
- Soft organs become hard
- Excessive roughness in soft organs
- Absence of organ, which generally present in particular site
- Dislocation or looseness of joints either downward or sides
- Excessive loss of muscles and blood
- Appearance of hardness
- Excessive perspiration or its absence etc. if observed without any appreciable cause indicates *ariṣṭa*

चक्षु (Eyes) examination indicates Ariṣṭa C.I 3/6

- If respiration is too long or shallow
- No pulsation observed in carotid region
- Accumulation of dirty substances like sugar particles or gravels with excessive whiteness
- Matting of eyelashes
- Eyes become excessively projected
- Eyes may become excessive withdrawn
- Too much slanting of eyes
- Unevenness in eyes
- Looseness in eyes
- Excessive secretions in the eyes
- Constantly wide open eyes
- Constantly closed eyes
- Excessive blinking and opening of eyes
- Perturbed, reverted, diminished or scattered vision
- Blindness (colour) of mongoose i.e. they view everything as black during day time
- Blindness (colour) of pigeon i.e. they view everything black during day time
- Eyes become red like fire brand
- Eyes become either black, yellow, blue, darkish brown (blackish), coppery, green, deep yellow, white

- If hair comes out from any part of the body without any pain when pulled indicates *ariṣṭa*
- Veinous prominence over abdomen with change in colour like darkish brown (blackish), coppery, blue, deep yellow and white
- If nails are devoid of muscles and blood and becomes black like ripe fruit of *jambu*
- No production of sound from finger joints even when bent and pressed.

इन्द्रियगम्य अरिष्ठ (Indriyagamya Ariṣṭa)

Specific features observed in sense organ of a patient indicating imminent death.

स्वस्थेभ्यो विकृतं यस्य ज्ञानमिन्द्रियसंश्रयम्।
आलक्ष्येतानिमित्तेन लक्षणं मरणस्य तत्॥

C. I 4/5

If any morbidity observed in sense organs without any apparent cause indicates definite death of the patient.

चक्षुरिन्द्रियगम्य अरिष्ठ (Cakṣurindriyagamya Ariṣṭa)

Characteristic features of *Cakṣurindriya* indicating death are as follows–

घनीभूतमिवाकाशमिव मेदिनीम्।
विगीतमुभयं ह्येतत् पश्यन् मरणमृच्छति।
यस्य दर्शनमायाति मारुतोऽम्बरगोचरः।
अग्निर्नायाति चादीप्तस्तस्यायुःक्षयमादिशेत्॥
जले सुविमले जालमजालावतते नरः।
स्थिते गच्छति वा दृष्ट्वा जीवितात् परिमुच्यते॥
जाग्रत् पश्यति यः प्रेतान् रक्षांसि विविधानि च।
अन्यद्वाऽप्यद्भुतं किञ्चिन्न स जीवितुमर्हति॥
योऽग्निं प्रकृतिवर्णस्थं नीलं पश्यति निष्प्रभम्।
कृष्णं वा यदि वा शुक्लं निशां व्रजति सप्तमीम्॥
मरीचीनसतो मेघान्मेघान् वाऽप्यसतोऽम्बरे।
विद्युतो वा विना मेघैः पश्यन् मरणमृच्छति॥
मृन्मयीमिव यः पात्रीं कृष्णाम्बरसमावृताम्।
आदित्यमीक्षते शुद्धं चन्द्रं वा न स जीवति॥
अपर्वणि यदा पश्येत् सूर्याचन्द्रमसोर्ग्रहम्।
अव्याधितो व्याधितो वा तदन्तं तस्य जीवितम्॥
नक्तं सूर्यमहश्चन्द्रमनग्नौ धूममुत्थितम्।
अग्निं वा निष्प्रभं रात्रौ दृष्ट्वा मरणमृच्छति॥
प्रभावतः प्रभाहीनान्निष्प्रभांश्च प्रभावतः।
नरा विलिङ्गान् पश्यन्ति भावान् भावाञ्जिहासवः॥
व्याकृतीनि विवर्णानि विसंख्योपगतानि च।
विनिमित्तानि पश्यन्ति रूपाण्यायुःक्षये नराः॥
यश्च पश्यत्यदृश्यान् वै दृश्यान् यश्च न पश्यति।
तावुभौ पश्यतः क्षिप्रं यमक्षयमसंशयम्॥

C. I 4/7-18

- If patient sees earth as sky and vice versa.
- One who sees the air in the sky in a moving form and does not visualize kindled fire.
- If person sees net like appearance in a clean water.
- During awake if person sees ghosts, demons and such other terrifying objects.
- If person observes normal coloured fire as blue, lustreless, black or white.
- One who sees rays of light without clouds or cloud or lightening when there is no such changes in the sky.
- If one who sees the sun or the moon like an earthen plate covered with a black cloth.
- Visualisation of lunar or solar eclipse in their absence by a healthy or a patient.
- One who sees sun in night, moon in day time or smoke when there is no fire or lustreless fire in night.
- If one who observes brilliant things as devoid of brilliance or non brilliant object as brilliant one or view the things devoid of their normal characteristics.
- Seeing things as deformed, multi coloured, inaccurate numbers without any actual reason.
- If one fails to visualize the visual objects and vice versa.

श्रवणेन्द्रियगम्य अरिष्ठ (Śravaṇendriyagamya Ariṣṭa)

Characteristic features of *śravaṇendriya* indicating death are as follows–

अशब्दस्य च यः श्रोता शब्दान् यश्च न बुध्यते।
द्वावप्येतौ यथा प्रेतौ तथा ज्ञेयौ विजानता॥
संवृत्याङ्गुलिभिः कर्णौ ज्वालाशब्दं य आतुरः।

न शृणोति गतांसु तं बुद्धिमान् परिवर्जयेत् ॥
C. I 4/19-20

- Hearing inaudible as audible and vice versa.
- One who fails to hear the heat sound after closing the ears with fingers.

घ्राणेन्द्रियगम्य अरिष्ठ (Ghrāṇendriyagamya Ariṣṭa)

Characteristic features of *ghrāṇendriya* indicating death are as follows–

विपर्ययेण यो विद्याद्गन्धानां साध्वसाधुताम्।
न वा तान् सर्वशो विद्यात्तं विद्याद्विगतायुषम्॥
C. I 4/21

- One who percieves the smell good as bad or vice versa.
- Fails to percieve the smell at all.

रसनेन्द्रियगम्य अरिष्ठ (Rasanendriyagamya Ariṣṭa)

Characteristic features of *rasanendriya* indicating death.

यो रसान्न विजानाति न वा जानाति तत्त्वतः।
मुखपाकादृते पक्वं तमाहुः कुशला नरम्॥
C. I 4/22

Even in the absence of stomatitis or any other inflammatory conditions in mouth if person fails to percieve the taste sensation or has a wrong gustatory perception indicates ariṣṭa.

स्पर्शनेन्द्रियगम्य अरिष्ठ (Sparśanendriyagamya Ariṣṭa)

Characteristic features of *sparṣanendriya* indicating death.

उष्णाञ्छीतान् खराञ्छ्लक्ष्णान्मृदूनपि च दारुणान्।
स्पृश्यान् स्पृष्ट्वा ततोऽन्यत्वं मुमूर्षस्तेषु मन्यते॥
C.I. 4/23

If one who has touch sensations of cold as hot, smooth as coarse, or soft as hard and vice versa.

पूर्वरूपगम्य अरिष्ठ (Pūrvarupagamya Ariṣṭa)

Premonitory signs and symptoms indicative of death are as follows–

पूर्वरूपाण्यसाध्यानां विकाराणां पृथक् पृथक्।
भिन्नाभिन्नानि वक्ष्यामो भिषजां ज्ञानवृद्धये ॥
पूर्वरूपाणि सर्वाणि ज्वरोक्तान्यतिमात्रया।
यं विशन्ति विशत्येनं मृत्युर्ज्वरपुरःसरः॥
अन्यस्यापि च रोगस्य पूर्वरूपाणि यं नरम्।
विशन्त्यनेन कल्पेन तस्यापि मरणं ध्रुवम् ॥
पूर्वरूपैकदेशांस्तु वक्ष्यामोऽन्यान् सुदारुणान्।
ये रोगाननुबध्नन्ति मृत्युर्यैरनुबध्यते॥
बलं च हीयते यस्य प्रतिश्यायश्च वर्धते।
तस्य नारीप्रसक्तस्य शोषोऽन्तायोपजायते॥
श्वभिरुष्ट्रैः खरैर्वाऽपि याति यो दक्षिणां दिशम्।
स्वप्ने यक्ष्माणमासाद्य जीवितं स विमुञ्चति॥
प्रेतैः सह पिबेन्मद्यं स्वप्ने यः कृष्यते शुना।
सुघोरं ज्वरमासाद्य जीवितं स विमुञ्चति॥
लाक्षारक्ताम्बराभं यः पश्यत्यम्बरमन्तिकात्।
स रक्तपित्तमासाद्य तेनैवान्ताय नीयते॥
रक्तस्रग्रक्तसर्वाङ्गो रक्तवासा मुहुर्हसन्।
यः स्वप्ने ह्रियते नार्या स रक्तं प्राप्य सीदति॥
शूलाटोपान्त्रकूजाश्च दौर्वल्यं चातिमात्रया।
नखादिषु च वैवर्ण्यं गुल्मेनान्तकरो ग्रहः॥
लता कण्टकिनी यस्य दारुणा हृदि जायते।
स्वप्ने गुल्मस्तमन्ताय क्रूरो विशति मानवम्॥
कायेऽल्पमपि संस्पृष्टं सुभृशं यस्य दीर्यते।
क्षतानि च न रोहन्ति कुष्ठैर्मृत्युर्हिनस्ति तम्॥
नग्नस्याज्यावसिक्तस्य जुह्वतोऽग्निमनर्चिषम्।
पद्मान्युरसि जायन्ते स्वप्ने कुष्ठैर्मरिष्यतः॥
स्नातानुलिप्तगात्रेऽपि यस्मिन् गृध्नन्ति मक्षिकाः।
स प्रमेहेण संस्पर्शं प्राप्य तेनैव हन्यते॥
C. I. 5/3-16

- Person who is suffering from *jvara* has all the *pūrvarupa* in full form.
- Excessive manifestation of premonitory symptoms and signs of any disease.
- If *rājayakṣmā* patients indulging in sex and gradually reducing weight and excessive excacerbation of *pratiśyāya*.
- If *rājayakṣmā* patient sees in his dreams as if he is dragged by dog or camel or asses towards south.
- In dream, person enjoys the company of ghosts and takes wine with them or drag by dogs leading to manifestation of dreadful fever.
- In dream, if patient observes the sky as red like a cloth dyed with lac from a distance near by person prove to suffer from *raktapitta* (haemorrhagic disorders).
- In dream, if person wearing red garlands, red

apparel, whole body appear like red, laughs intermittently, dragged by a woman, this indicates person is going to suffer from *raktapitta.*

- Excessive colicky pain, meteorism, gurgling sound in abdomen, discolouration of nails indicate the person is suffering from fatal disorder *gulmà.*
- In dream, one who sees the growth of spiky creeper in the chest, he falls a victim of dreadful disease *gulma.*
- Mild injury leading to big wound and wound does not heal indicates person is going to suffer from dreadful disease *kuṣṭha.*
- If person observes, in dreams, as if he is naked, anointed with ghee, and offering oblations to flameless fire and has growth of lotus flower over his chest indicates person is going to suffer from fatal disease *kuṣṭha.*
- If flies are attracted towards an individual inspite of taking bath and applying unguentum, indicates that person is suffering from dreadful disease *prameha.*

स्वप्नगम्य अरिष्ठ (Svapnagamya Ariṣṭa)

Svapna (dreams) indicating imminent death or person is afflicting with severe diseases.

इमांश्चाप्यपरान् स्वप्नान् दारुणानुपलक्षयेत् ।
व्याधितानां विनाशाय क्लेशाय महतेऽपि वा ॥
यस्योत्तमाङ्गे जायन्ते वंशगुल्मलतादयः ।
वयांसि च विलीयन्ते स्वप्ने मौण्ड्यमियाच्च यः ॥
गृध्रोलूकश्वकाकाद्यैः स्वप्ने यः परिवार्यते ।
रक्षःप्रेतपिशाचस्त्रीचण्डालद्रविडान्ध्रकैः ॥
वंशवेत्रलतापाशतृणकण्टकसङ्कटे ।
संसज्जति हि यः स्वप्ने यो गच्छन् प्रपतत्यपि ॥
भूमौ पांशूपधानायां वल्मीके वाऽथ भस्मनि ।
श्मशानायतने श्वभ्रे स्वप्ने यः प्रपतत्यपि ॥
कलुषेऽम्भसि पङ्के वा कूपे वा तमसाऽऽवृते ।
स्वप्ने मज्जति शीघ्रेण स्त्रोतसा ह्रियते च यः ॥
स्नेहपानं तथाऽभ्यङ्गः प्रच्छर्दनविरेचने ।
हिरण्यलाभः कलहः स्वप्ने बन्धपराजयौ ॥
उपानद्युगनाशश्च प्रपातः पादचर्मणोः ।
हर्षः स्वप्ने प्रकुपितैः पितृभिश्चावभर्त्सनम् ॥
दन्तचन्द्रार्कनक्षत्रदेवतादीपचक्षुषाम् ।
पतनं वा विनाशो वा स्वप्ने भेदो नगस्य वा ॥
रक्तपुष्पं वनं भूमिं पापकर्मालयं चिताम् ।
गुहान्धकारसंबाधं स्वप्ने यः प्रविशत्यपि ॥
रक्तमाली हसन्नुच्चैर्दिग्वासा दक्षिणां दिशम् ।
दारुणामटवीं स्वप्ने कपियुक्तेन याति वा ॥
काषायिणामसौम्यानां नग्नानां दण्डधारिणाम् ।
कृष्णानां रक्तनेत्राणां स्वप्ने नेच्छन्ति दर्शनम् ॥
कृष्णा पापा निराचारा दीर्घकेशनखस्तनी ।
विरागमाल्यवसना स्वप्ने कालनिशा मता ॥
इत्येते दारुणाः स्वप्ना रोगी यैर्याति पञ्चताम् ।
अरोगः संशयं गत्वा कश्चिदेव प्रमुच्यते ॥

C.I. 5/27-40

- Growth of bamboo, shrubs, creepers etc. over the head, where in birds hide themselves.
- One who gets his head shaved.
- One who sorrounded by vultures, owls, dogs, crows along with demons, soul of dead persons, evil spirits, women, *cāṇḍāla* (a person born of *śudra* father and *brāhmin* mother), *Drāviḍians* and *Āndrās.*
- One who get stucked in bush of bamboo, canes, cree-pers, grasses and thorny herbs or they fell down while walking.
- If person fall down in such a place, where it is full of dust, over ant-hill or ashes or cremation ground or ditch.
- One who drowns on unclean water, mud or in dark well or being carried by the stream flowing speedily.
- Consumption of fatty substances, undergoing massage therapy, emesis, purgation.
- Acquisition of gold, seeing quarrel or indulging in quarrel, arrest and defeat.
- Loosing both shoes, peeling of slan out of feet, exhiliration and insult by angry fore feathers.
- Falling or destruction of teeth, moon, sun, stars, the gods, lamp or eyes or cracking of a hill.
- Entrance into forest which is full of red coloured flowers, the earth (abode of sinful acts), funeral pyre or entrance to cave, which is full of darkness.
- Wearing red garlands, laughing loudly, moves

nakedly toward south or to a dense forest along with monkey.

- Person who is wearing ochre coloured cloth, with terrifying look, naked, carrying stick, blackish discolouration with reddish eyes.
- Seeing blackish discoloured women devoid of conduct with long hair, nails, breasts, devoid of cosmetics, garland and apparel.

Suśruta also mentioned inauspicious dreams in *Sutrasthāna* 29th chapter.

Process of Manifestation of Dreams

मनोवहानां पूर्वत्वाद्दोषैरतिबलैस्त्रिभिः।
स्त्रोतसां दारुणान् स्वप्नान् काले पश्यति दारुणे॥
नातिप्रसुप्तः पुरुषः सफलानफलांस्तथा।
इन्द्रियेशेन मनसा स्वप्नान् पश्यत्यनेकधा॥

C. I 5/41-42

When *manovaha srotas* is full of exceedingly excacerbated three *doṣās* leading to observation of terrific dreams in critical period.

If person sees various fruitful or fruitless dreams in sub conscious stage that a person is enabled by his mind which controls sense organs.

Dreams Indicating Death in Different Diseases

ज्वरितानां शुना सख्यं कपिसख्यं तु शोषिणाम्।
उन्मादे राक्षसैः प्रेतैरपस्मारे प्रवर्तनम्।
मेहातिसारिणां तोयपानां स्नेहस्य कुष्ठिनाम्।
गुल्मेषु स्थावरोत्पत्तिः कोष्ठे, मूर्ध्नि शिरोरुजि।
शष्कुलीभक्षणं छर्द्यामध्वा श्वासपिपासयोः।
हारिद्रं भोजनं वाऽपि यस्य स्यात् पाण्डुरोगिणः।
रक्तपित्ती पिबेद्यस्तु शोणितं स विनश्यति।

S. Su 29/68-71

1. *Jvara rogi*–If he sees dreams as if he is having friendship with dogs.
2. *Śoṣa rogi*–If he makes friendship with monkey
3. *Unmāda*–Moving with demons
4. *Apasmāra*–Moving with ghosts
5. *Meha and Atisāra*–Drinking water
6. *Kuṣṭha*–Drinking fats
7. *Gulma*–Seeing plants growing over his abdomen and head and suffering from headache.
8. *Chardi*–Consuming fried pastry
9. *Śvāsa and pipāsa*–Walking long distances
10. *Pāṇḍu rogi*–Consuming rice boiled with *haridrā*
11. *Raktapitta*–Drinking blood

स्वप्न फल (Results of Various Dreams)

तत्र पञ्चविधं पूर्वमफलं भिषगादिशेत्।
दिवास्वप्नमतिह्रस्वमतिदीर्घं च बुद्धिमान्॥
दृष्टः प्रथमरात्रे यः स्वप्नः सोऽल्पफलो भवेत्।
न स्वपेद्यं पुनर्दृष्ट्वा स सद्यः स्यान्महाफलः॥
अकल्याणमपि स्वप्नं दृष्ट्वा तत्रैव यः पुनः।
पश्येत् सौम्यं शुभाकारं तस्य विद्याच्छुभं फलम्॥

C. I 5/44-46

Dreams relates to visual perception, auditory perception, experiences through other means, strong desire, imagination, dreams experienced during day time, dreams which are too short or too long are fruitless dreams.

Dreams experienced in the early hours of night yields less results.

If one who fails to get sleep after seeing dreams, which is highly fruitful.

After experiencing inauspicious dream, if person experiences auspicious dream thereafter, it indicates good results.

रूप गम्य अरिष्ठ (Rupa Indicating Imminent Death)

यस्य वै भाषमाणस्य रुजत्यूर्ध्वमुरो भृशम्।
अन्नं च च्यवते भुक्तं स्थितं चापि न जीर्यति॥
बलं च हीयते शीघ्रं तृष्णा चातिप्रवर्धते।
जायते हृदि शूलं च तं भिषक् परिवर्जयेत्॥

C. I 6/5-6

The following symptoms and signs indicating physical abnormalities and such patients should be discarded by the physician are as follows–

- If patient experiences severe pain in upper part of chest while speaking.
- Emitting food
- Indigestion inspite of retainment of food in stomach
- Unexplained weight loss all of a sudden

- Excessive thirst
- Pain in the heart

The following symptoms indicating fatal symptoms in various diseases are as follows–

हिक्का गम्भीरजा यस्य शोणितं चातिसार्यते।
न तस्मै भेषजं दद्यात् स्मरन्नात्रेयशासनम्॥

C. I 6/7

Gambhīra hikkā and *raktātisāra* patients should not be treated

आनाहश्चातिसारश्च यमेतौ दुर्बलं नरम्।
व्याधितं विशतो रोगौ दुर्लभं तस्य जीवितम्॥

C. I 6/8

If debilitated person suffers from *ānāha* and *atisāra*, his survival is rare.

आनाहश्चातितृष्णा च यमेतौ दुर्बलं नरम्।
विशतो विजहत्येनं प्राणा नातिचिरान्नरम् ॥

C. I 6/9

If debilitated person suffers from *ānāha* and excessive *tṛṣṇā*, he will definitely die soon.

ज्वरः पौर्वाह्णिको यस्य शुष्ककासश्च दारुणः।
बलमांसविहीनस्य यथा प्रेतस्तथैव सः॥

C. I 6/10

One who is suffering from morning fever with severe cough and having loss of strength and muscles. He is just like ghost.

यस्य मूत्रं पुरीषं च ग्रथितं संप्रवर्तते।
निरूष्मणो जठरिणः श्वसनो न स जीवति॥

C. I 6/11

Person who is suffering from dyspnea, abdominal disorders, lack of power of *agni,* passes hard stool and urine in condensed form.

श्वयथुर्यस्य कुक्षिस्थो हस्तपादं विसर्पति।
ज्ञातिसङ्घं स संक्लेश्य तेन रोगेण हन्यते॥

C. I 6/12

If person who is suffering from *śvayathu,* which is initially confined to abdomen later spreads to hands and feet, dies with prolonged illness.

श्वयथुर्यस्य पादस्थस्तथा स्रस्ते च पिण्डिके।
सीदतश्चाप्युभे जङ्घे तं भिषक् परिवर्जयेत्॥

C. I 6/13

Oedema in feet, slackness in calf muscles along with extreme weakness in the legs such cases should not be treated.

शूनहस्तं शूनपादं शूनगुह्योदरं नरम्।
हीनवर्णबलाहारमौषधैर्नोपपादयेत् ॥

C. I. 6/14

If person who is suffering from oedema in hands, feet, perineum or private parts and abdomen along with diminished complexion, strength and reduced capacity to consume food. For such patients physician should not prescribe medicine.

उरोयुक्तो बहुश्लेष्मा नीलः पीतः सलोहितः।
सततं च्यवते यस्य दूरात्तं परिवर्जयेत्॥

C. I 6/15

If patient expectorates profuse sputum having blue, yellow or red colour from the chest of a patient should be discarded even from distance.

हृष्टरोमा सान्द्रमूत्रः शूनः कासज्वरार्दितः।
क्षीणमांसो नरो दूराद्वर्ज्यो वैद्येन जानता॥

C. I 6/16

If patient suffers from horripilation, passes viscous urine, oedema, cough, fever along with extreme emaciation should be discarded from distance.

त्रयः प्रकुपिता यस्य दोषाः कष्टाभिलक्षिताः।
कृशस्य बलहीनस्य नास्ति तस्य चिकित्सितम्॥

C. I 6/17

If a patient is severly emaciated and weak along with excessive excacerbation of three *doṣās* leading to non treatable condition.

ज्वरातिसारौ शोफान्ते श्वयथुर्वा तयोः क्षये।
दुर्बलस्य विशेषेण नरस्यान्ताय जायते॥

C. I 6/18

If weak person suffer from fever and diarrhoea after oedema or vice versa indicates death.

पाण्डुरश्च कृशोऽत्यर्थं तृष्णयाऽभिपरिप्लुतः।
डम्बरी कुपितोच्छ्वासः प्रत्याख्येयो विजानता॥

C. I 6/19

The patient who is having excessive pallor, excessive emaciation, excessive thirst, rigid and fixed vision, abdominal distension and difficult expiration should be discarded by the physician.

हनुमन्याग्रहस्तृष्णा बलह्रासोऽतिमात्रया ।
प्राणाश्चोरसि वर्तन्ते यस्य तं परिवर्जयेत् ॥

C. I 6/20

If patient of *hanustambha* and *manyastambha* suffers from excessive thirst, excessive reduction of strength and vital breath confined only to chest, such patient should be discarded.

ताम्यत्यायच्छते शर्म न किञ्चिदपि विन्दति ।
क्षीणमांसबलाहारो मुमूर्षुरचिरान्नराः ॥

C. I 6/21

If a patient gets attacks of fainting and violent movements of the body without any rest and has diminished muscles & strength, with lack of digestive power, he will succumb to death very soon.

विरुद्धयोनयो यस्य विरुद्धोपक्रमा भृशम् ।
वर्धन्ते दारुणा रोगाः शीघ्रं स हन्यते ॥

C. I 6/22

If severe diseases having mutually contradictory etiological factors and principles of treatment aggravate suddenly in a galloping speed, patient will die very soon.

बलं विज्ञानमारोग्यं ग्रहणी मांसशोणितम् ।
एतानि यस्य क्षीयन्ते क्षिप्रं क्षिप्रं स हन्यते ॥

C. I 6/23

If patient develops sudden diminution of strength, intellect, health, digestion, muscles, blood succumb to death very soon.

आरोग्यं हीयते यस्य प्रकृतिः परिहीयते ।
सहसा सहसा तस्य मृत्युर्हरति जीवितम् ॥

C. I 6/24

Sudden deterioration of health and change in physical constitution indicates person is going to die soon.

छायागम्य अरिष्ठ (Chāyāgamya Ariṣṭa)

दृष्ट्यां यस्य विजानीयात् पन्नरूपां कुमारिकाम् ।
प्रतिच्छायामयीमक्ष्णोर्नैनमिच्छेच्चिकित्सितुम् ॥

C. I 7/3

Any sort of distortion observed in the shadow image in the pupil of the patient, such condition should be discarded for treatment.

ज्योत्स्नायामातपे दीपे सलिलादर्शयोरपि ।
अङ्गेषु विकृता यस्य च्छाया प्रेतस्तथैव सः ॥

C. I 7/4

If any sorts of deformity observed in body parts in the shadow of the person in moonlight, sunlight, light of a lamp, water or mirror. He should be considered as ghost and rejected for treatment.

छिन्ना भिन्नाऽऽकुलाच्छाया हीना वाऽप्यधिकाऽपि वा ।
नष्टा तन्वी द्विधाच्छिन्ना विकृता विशिरा च या ॥
एताश्चान्याश्च याः काश्चित् प्रतिच्छाया विगर्हिताः ।
सर्वा मुमूर्षतां ज्ञेया न चेल्लक्ष्यनिमित्तजाः ॥

C. I 7/5-6

Observation of shadow of a patient as broken, torn, hazy, devoid of certain organs, seeing excess organs, not conspi-cuous, bifurcated, deformed and without head, such other similar abnormal shadows if develops without any apparent cause it is considered as severe morbidity.

संस्थानेन प्रमाणेन वर्णेन प्रभया तथा ।
छाया विवर्तते यस्य स्वस्थोऽपि प्रेत एव सः ॥

C. I 7/7

Distortion of shadow in healthy individual in respect of changes in shape, measurement, colour and lustre should be considered as omnious sign.

संस्थानमाकृतिर्ज्ञेया सुषमा विषमा च सा ।
मध्यमल्पं महच्चोक्तं प्रमाणं त्रिविधं नृणाम् ॥
प्रतिप्रमाणसंस्थाना जलादर्शातपादिषु ।
छाया या सा प्रतिच्छाया च्छाया वर्णप्रभाश्रया ॥

C. I 7/8-9

The term *saṁsthāna* means shape which may be symmetrical or asymmetrical.

Measurement is of three kinds namely medium, short, large. The image reflected in water, mirror, sun etc., corresponding to the measurement and shape of the body of the individual is known as *praticchāya* which is nothing but reflected shadow based on the colour and lustre of the individual.

Signs of Imminent Death

कामलाऽक्ष्णोर्मुखं पूर्णं शङ्खयोर्मुक्तमांसता ।
संत्रासश्चोष्णगात्रत्वं यस्य तं परिवर्जयेत् ॥

C. I 7/18

Patient who is suffering from *kāmalā*, swelling in face, wasting in temples, terrifying appearance with high fever such patient should be discarded for management.

उत्थाप्यमानः शयनात् प्रमोहं याति यो नरः।
मुहुर्मुहुर्न सप्ताहं स जीवति विकत्थनः॥

C. I 7/19

Patient who faints again and again while being lifted from bed cannot survive for a week.

संसृष्टा व्याधयो यस्य प्रतिलोमानुलोमगाः।
व्यापन्ना ग्रहणी प्रायः सोऽर्धमासं न जीवति॥

C.I 7/20

The patient afflicted with multiple *doṣās* having upward, downward directions of movement along with disordered *grahaṇi* cannot survive for longer than for a fortnight.

उपरुद्धस्य रोगेण कर्शितस्याल्पमश्नतः।
बहु मूत्रपुरीषं स्याद्यस्य तं परिवर्जयेत्॥

C.I 7/21

Consumption of little quantity of food by emaciated person but exceretes large amount of urine and stool should be discarded for management.

दुर्बलो बहु भुङ्क्ते यः प्राग्भुक्तादन्नमातुरः।
अल्पमूत्रपुरीषश्च यथा प्रेतस्तथैव सः॥

C.I 7/22

Consumption of excess quantity of food by weak patient but passes scanty urine and stool should be considered as ghost or almost dead.

इष्टं च गुणसंपन्नमन्नमश्नाति यो नरः।
शश्वच्च बलवर्णाभ्यां हीयते न स जीवति॥

C. I 7/23

Inspite of taking suitable dietetics if person constantly looses strength and complexion indicates bad prognosis.

प्रकूजति प्रश्वसिति शिथिलं चातिसार्यते।
बलहीनः पिपासार्तः शुष्कास्यो न स जीवति॥

C. I 7/24

If a person who is weak, thirsty and having dryness of mouth, if he suffers from groaning, dyspnoea and diarrhoea, then it should not be treated because he will not survive.

ह्रस्वं च यः प्रश्वसिति व्याविद्धं स्पन्दते च यः।
मृतमेव तमात्रेयो व्याचचक्षे पुनर्वसुः॥

C. I 7/25

If patient is suffering from shallow respiration with irregular twitchings in the body is said to be severe fatal condition like almost dead.

ऊर्ध्वं च यः प्रश्वसिति श्लेष्मणा चाभिभूयते।
हीनवर्णबलाहारो यो नरो न स जीवति॥

C. I 7/26

Person who is suffering from respiratory distress with abundance of *kapha* along with diminution of complexion, strength and less intake of food. He will not survive for longer.

ऊर्ध्वाग्रे नयने यस्य मन्ये चारतकम्पने।
बलहीनः पिपासार्तः शुष्कास्यो न स जीवति॥

C. I 7/27

A weak, thirsty and dryness of mouth if observed in individual, whose eyes are slanted in the carotid region of the neck, will not survive.

यस्य गण्डावुपचितो ज्वरकासौ च दारुणौ।
शूली प्रद्वेष्टि चाप्यन्नं तस्मिन् कर्म न सिध्यति॥

C. I 7/28

If a person having prominent cheeks along with high fever, severe cough, colic and dislike for food, he will not cure from his ailments.

कण्टकैश्चाचिता जिह्वा यथा प्रेतस्तथैव सः।
व्यावृत्तमूर्धजिह्वास्यो भ्रुवौ यस्य च विच्युतै॥

C. I 7/29

If there is a distortion of the head, tongue and face, drooping of eye brows and appearance of thorny coat over tongue, don't treat such patients due to its omnious nature.

शेफश्चात्यर्थमुत्सिक्तं निःसृतौ वृषणौ भृशम्।
अतश्चैव विपर्यासो विकृत्या प्रेतलक्षणम्॥

C. I 7/30

Whose penis is excessively shrunken along with pendulous testicles or vice versa, such signs are indicative of death of a patient immediately.

निचितं यस्य मांसं स्यात्त्वगस्थिष्वेव दृश्यते।
क्षीणस्यानश्नतस्तस्य मांसमायुः परं भवेत्॥

C. I 7/31

In emaciated individual whose muscles are excessively undergone wasting with remnants of skin and bone does not survive more than one month.

यस्य श्यावे परिध्वस्ते हरिते चापि दर्शने ।
आपन्नो व्याधिरन्ताय ज्ञेयस्तस्य विजानता ॥

C. I 9/3

In patient whose eyes are blackish, green and devoid of vision indicates death of the patient.

निःसंज्ञः परिशुष्कास्यः समृद्धो व्याधिभिश्च यः ।
उपरुद्धायुषं ज्ञात्वा तं घोरः परिवर्जयेत् ॥

C. I 9/4

The patient who is unconscious along with dryness of mouth associated with aggravation of disease indicates bad prognosis & such patient should not be entertained for treatment.

हरिताश्च सिरा यस्य लोमकूपाश्च संवृताः ।
सोऽम्लाभिलाषी पुरुषः पित्तान्मरणमश्नुते ॥

C. I 9/5

A person who is suffering from *pittaja* diseases having greenish discolouration of *sirā* (vessels) along with obstruction to hair follicles and desire to take sour preparations will succumb to death suddenly.

शरीरान्ताश्च शोभन्ते शरीरं चोपशुष्यति ।
बलं च हीयते यस्य राजयक्ष्मा हिनस्ति तम् ॥

C. I 9/6

A patient of *rājayakṣmā* if suffers from plumpness of the extremities but having emaciation of trunk associated with diminution of strength, surely he will die.

अंसाभितापो हिक्का च छर्दनं शोणितस्य च ।
आनाहः पार्श्वशूलं च भवत्यन्ताय शोषिणः ॥

C. I 9/7

A patient of *rājayakṣmā* associated with burning sensation in shoulder region, hiccup, haemoptysis, distended abdomen due to constipation with pain in sides of chest lead to death of the patient.

वातव्याधिरपस्मारी कुष्ठी शोफी तथोदरी ।
गुल्मी च मधुमेही च राजयक्ष्मी च यो नरः ॥
अचिकित्स्या भवन्त्येते बलमांसक्षये सति ।
अन्येष्वपि विकारेषु तान् भिषक् परिवर्जयेत् ॥

C. I 9/8-9

A patient who is suffering from *vāta vyādhi, apasmāra, kuṣṭha, śopha, udara roga, gulma, madhumeha* do not respond to any treatment, if these diseases associates with diminution of strength and muscles. Similarly other diseases having diminished strength & muscles are discarded for management.

विरेचनहृतानाहो यस्तृष्णानुगतो नरः ।
विरिक्तः पुनराध्माति यथा प्रेतस्तथैव सः ॥

C.I 9/10

If patient suffering from *ānāha* gets relief after purgation therapy but subsequently develops thirst and suffers from *ānāha* again inspite of purgation, should be considered as bad prognosis & patient will die soon.

पेयं पातुं न शक्नोति कण्ठस्य च मुखस्य च ।
उरसश्च विशुष्कत्वाद्यो नरो न स जीवति ॥

C.I 9/11

A person who is unable to drink liquid substances due to dryness of throat, mouth and chest does not survive.

स्वरस्य दुर्बलीभावं हानिं च बलवर्णयोः ।
रोगवृद्धिमयुक्त्या च दृष्ट्वा मरणमादिशेत् ॥

C.I 9/12

If patient develops weakness in voice, diminution of strength and complextion and aggravation of disease without any apparent cause indicate the imminent death of the patient.

ऊर्ध्वश्वासं गतोष्माणं शूलोपहतवङ्क्षणम् ।
शर्म चानधिगच्छन्तं बुद्धिमान् परिवर्जयेत् ॥

C.I 9/13

If patient develops respiratory distress, subnormal temperature, pain in the groins and no response observed inspite of proper treatment, such patient should be discarded for management.

अपस्वरं भाषमाणं प्राप्तं मरणमात्मनः ।
श्रोतारं चाप्यशब्दस्य दूरतः परिवर्जयेत् ॥

C.I 9/14

A patient who talks in feeble voice about the advent of his own death and having auditory hallucinations should be discarded for management.

निष्ठ्यूतं च पुरीषं च रेतश्चाम्भसि मज्जति।
यस्य तस्यायुषः प्राप्तमन्तमाहुर्मनीषिणः॥
C.I 9/18

If the sputum, stool and semen sink in water, such patients should not be treated because their survival period is almost ended.

निष्ठ्यूते यस्य दृश्यन्ते वर्णा बहुविधाः पृथक्।
तच्च सीदत्यपः प्राप्य न स जीवितुमर्हति॥
C.I 9/19

Appearance of various colours in sputum and which sinks in water cannot survive for long.

पित्तमूष्मानुगं यस्य शङ्खौ प्राप्य विमूर्च्छति।
स रोगः शङ्खको नाम्ना त्रिरात्राद्धन्ति जीवितम्॥
C.I 9/20

Person who is suffering from *śankhaka,* which manifest due to interaction of the vitiated *pitta* with *agni* in the temporal region. It kills the patient within 3 days.

सफेनं रुधिरं यस्य मुहुरास्यात् प्रसिच्यते।
शूलैश्च तुद्यते कुक्षिः प्रत्याख्येयस्तथाविधः॥
C.I 9/21

The patient who is suffering from pain in the lower abdomen and froathy haemoptysis frequency then such patients should not be treated.

बलमांसक्षयस्तीव्रो रोगवृद्धिररोचकः।
यस्यातुरस्य लक्ष्यन्ते त्रीन् पक्षान्न स जीवति॥
C.I 9/22

Sudden diminution of strength and muscles along with aggravation of disease with anorexia, such patients will not survive more than three fortnights.

सद्योमरणमिन्द्रिय अरिष्ठ (Sadyomaraṇamindriya Ariṣṭa)

Signs and symptoms indicative of impending sudden death (*Sadhyomaraṇa-mindriya*)

सद्यस्तितिक्षतः प्राणाँल्लक्षणानि पृथक् पृथक्।
अग्निवेश ! प्रवक्ष्यामि संस्पृष्टो यैर्न जीवति॥
C. I 10/3

The following symptomatology indicates the omnious nature and patient will not survive.

वाताष्ठीला सुसंवृद्धा तिष्ठन्ती दारुणा हृदि।
तृष्णयाऽभिपरीतस्य सद्यो मुष्णाति जीवितम्॥
C. I 10/4

If *vātāṣṭhīlā* patient suffers from severe thirst and excessively aggravated *doṣās* enters the cardiac region and kills the person.

पिण्डिके शिथिलीकृत्य जिह्मीकृत्य च नासिकाम्।
वायुः शरीरे विचरन् सद्यो मुष्णाति जीवितम्॥
भ्रुवौ यस्य च्युते स्थानादन्तर्दाहश्च दारुणः।
तस्य हिक्काकरो रोगः सद्यो मुष्णाति जीवितम्॥
C. I 10/5-6

Agitated *vāyu* circulates all over the body and develops slackness in calf muscles along with crooked nose.

If hiccup develops in a patient who has drooping of the eyebrows and excessive burning sensation in body.

क्षीणशोणितमांसस्य वायुरूर्ध्वगतिश्चरन्।
उभे मन्ये समे यस्य सद्यो मुष्णाति जीवितम्॥
C. I 10/7

Aggravated *vāta* moving upwards and brings affliction in carotid region of the neck in a person who is having diminution of blood and muscles.

अन्तरेण गुदं गच्छन् नाभिं च सहसाऽनिलः।
कृशस्य वंक्षणौ गृह्णन् सद्यो मुष्णाति जीवितम्॥
C. I 10/8

Agitated *vāyu* moves suddenly from anus to umbilicus and produces affliction in groin in a weak patient.

वितत्य पर्शुकाग्राणि गृहीत्वोरश्च मारुतः।
स्तिमितस्यायताक्षस्य सद्यो मुष्णाति जीवितम्॥
C. I 10/9

Agitated *vāyu* enters chest and stretches the tips of ribs & obstruct the normal functions in chest and whose eyes are dilated along with cold and clammy body.

हृदयं च गुदं चोभे गृहीत्वा मारुतो बली।
दुर्बलस्य विशेषेण सद्यो मुष्णाति जीवितम्॥
वंक्षणं च गुदं चोभे गृहीत्वा मारुतो बली।
श्वासं संजनयञ्जन्तोः सद्यो मुष्णाति जीवितम्॥
C. I 10/10-11

Agitated *vāyu* seizes the functions of anus and heart in weak patient.

If agitated powerful *vāta* seizing groins and anus along with respiratory distress.

नाभिं मूत्रं वस्तिशीर्षं पुरीषं चापि मारुतः।
प्रच्छिन्नं जनयञ्छूलं सद्यो मुष्णाति जीवितम्॥
C. I 10/12

Agitated *vāyu* enters the umbilicus, urine, kidneys and stool and manifest pain and affliction in these areas.

भिद्यते वंक्षणौ यस्य वातशूलैः समन्ततः।
भिन्नं पुरीषं तृष्णा च सद्यः प्राणाञ्जहाति सः॥
C. I 10/13

Agitated *vāta* enters groin region and manifest pricking pain in groin region along with diarrhoea and thirst.

आप्लुतं मारुतेनेह शरीरं यस्य केवलम्।
भिन्नं पुरीषं तृष्णा च सद्यो जह्यात् स जीवितम्॥
C. I 10/14

Agitated powerful *vāta* pervades all over the body along with diarrhoea and thirst.

शरीरं शोफितं यस्य वाताशोफेन देहिनः।
भिन्नं पुरीषं तृष्णा च सद्यो जह्यात् स जीवितम्॥
C. I 10/15

If agitated *vāta* develops *śotha* in entire body along with diarrhoea and thirst.

आमाशयसमुत्थाना यस्य स्यात् परिकर्तिका।
भिन्नं पुरीषं तृष्णा च सद्यः प्राणाञ्जहाति सः॥
C. I 10/16

If agitated *vāta* enters the *āmāśaya* and develops sawing pain along with diarrhoea and thirst.

पक्वाशयसमुत्थाना यस्य स्यात् परिकर्तिका।
तृष्णा गुदग्रहश्चोग्रः सद्यो जह्यात् स जीवितम्॥
C. I 10/17

If agitated *vāta* enters *pakvāśaya* and develops cutting pain in that region along with diarrhoea and thirst.

पक्वाशयमधिष्ठाय हत्वा संज्ञां च मारुतः।
कण्ठे घुर्घुरकं कृत्वा सद्यो हरति जीवितम॥
C. I 10/18

Development of stertorous breathing in the throat and unconscious due to *vāta* having its site of manifestation in *pakvāśaya.*

दन्ताः कर्दमदिग्धाभा मुखं चूर्णकसन्निभम्।
सिप्रायन्ते च गात्राणि लिङ्गं सद्यो मरिष्यतः॥
C. I 10/19

If teeth appears as if annointed with mud, face as if covered with ashes and excessive perspiration.

तृष्णाश्वासशिरोरोगमोहदौर्बल्यकूजनैः ।
स्पृष्टः प्राणाञ्जहात्याशु शकृद्भेदेन चातुरः॥
C. I 10/20

Development of diarrhoea in a patient who is suffering from thirst, dyspnoea, disorders of head, unconsciousness, debility and groaning sound from the throat are the signs of imminent death due to diminution of bodily heat.

अणुज्योतिरनेकाग्रो दुश्छायो दुर्मनाः सदा।
रतिं न लभते याति परलोकं समान्तरम्॥
C. I 11/3

Whose body heat is diminished, absence of concentration of mind, loss of complexion, weakness of mind and absence of attachment for life indicate the death of person within one year.

बलिं बलिभृतो यस्य प्रणीतं नोपभुञ्जते।
लोकान्तरगतः पिण्डं भुङ्क्ते संवत्सरेण सः॥
C. I 11/4

Whose offering is refused by crows indicates death within a year.

विकृत्या विनिमित्तं यः शोभामुपचयं धनम्।
प्राप्नोत्यतो वा विभ्रंशं समान्तं तस्य जीवितम्॥
C. I 11/6

Sudden gain or loss of lustre, corpulence or wealth without any appropriate cause indicate the death of the patient one year there after.

भक्तिः शीलं स्मृतिस्त्यागो बुद्धिर्बलमहेतुकम्।
षडेतानि निवर्तन्ते षड्भिर्मासैर्मरिष्यतः॥
C. I 11/7

Cessation of inclination, conduct, memory, sacrifice, intellect and strength without any apparent cause indicate the death of the person within six months.

धमनीनामपूर्वाणां जालमत्यर्थशोभनम् ।
ललाटे दृश्यते यस्य षण्मासान्न स जीवति ॥

C. I 11/8

Development of exceedingly shining net work of vessels in the forehead indicates death within six months.

लेखाभिश्चन्द्रवक्राभिर्ललाटमुपचीयते ।
यस्य तस्यायुषः षड्भिर्मासैरन्तं समादिशेत् ॥

C. I 11/9

Appearance of crescent shaped streaks over forehead indicates death within six months.

शरीरकम्पः संमोहो गतिर्वचनमेव च ।
मत्तस्येवोपलभ्यन्ते यस्य मासं न जीवति ॥

C. I 11/10

If the tremors in the body, stupor, gait and speech resemble to that of intoxicated person indicates death within a month.

रेतोमूत्रपुरीषाणि यस्य मज्जन्ति चाम्भसि ।
स मासात् स्वजनद्वेष्टा मृत्युवारिणि मज्जति ॥

C. I 11/11

If the semen, urine and feces of a person sinks when placed on water and there is aversion for his own relatives, then he succumbs to death within one month.

हस्तपाद मुखं चोभे विशेषाद्यस्य शुष्यतः ।
शूयेते वा विना देहात् स च मासं न जीवति ॥

C. I 11/12

Sudden emaciation or swelling in upper extremties, lower extremities and face without undergoing any changes in the body, he does not survive for more than one month.

ललाटे मूर्ध्नि बस्तौ वा नीला यस्य प्रकाशते ।
राजी बालेन्दुकुटिला न स जीवितुमर्हति ॥

C. I 11/13

Appearance of crescent shaped blue streaks in the forehead, head and pelvic region indicates person will not survive longer.

प्रवालगुटिकाभासा यस्य गात्रे मसूरिकाः ।
उत्पद्याशु विनश्यन्ति न चिरात् स विनश्यति ॥

C. I 11/14

If a person develops eruptions of *masūrikā* having the appearance of coral beads and disappear instantaneously indicates death of the patient suddenly.

ग्रीवावमर्दो बलवाञ्जिह्वाश्वयथुरेव च ।
ब्रध्नास्यगलपाकश्च यस्य पक्वं तमादिशेत् ॥

C. I 11/15

If patient is suffering from squeezing pain in neck, glossitis inflammation in inguinal glands, mouth, throat should be considered as matured for death.

संभ्रमोऽतिप्रलापोऽतिभेदोऽस्थ्नामतिदारुणः ।
कालपाशपरीतस्य त्रयमेतत् प्रवर्तते ॥

C. I 11/16

Three omnious triad are excessive giddiness, extreme delirium and breaking pain in bones indicates person is in peak for death.

प्रमुह्य लुञ्चयेत् केशान् परिगृह्णात्यतीव च ।
नरः स्वस्थवदाहारमबलाः कालचोदितः ॥

C. I 11/17

A weak person who pulls out his hair in a state of unconsciousness and eats food in excessive quantity as if he is a healthy man, is as good as dead.

समीपे चक्षुक्षोः कृत्वा मृगयेताङ्गुलीकरम् ।
स्मयतेऽपि च कालान्ध ऊर्ध्वगानिमिषेक्षणः ॥

C. I 11/18

A person whose vision is fixed and directed upwards, who searches for his hands and fingers which are placed in front of his eyes and smiles while doing so, succumbs to death immediately.

शयनादासनादङ्गात् काष्ठात् कुड्यादथापि वा ।
असन्मृगयते किञ्चित् स मुह्यन् कालचोदितः ॥

C. I 11/19

Due to hallucination a person gropes for a nonexistent things in the beds, seats, limbs of the body, wooden blocks or walls, should be considered as nearer to death.

अहास्यहास्नी संमुह्यन् प्रलेढि दशनच्छदौ ।
शीतपादकरोच्छ्वासो यो नरो न स जीवति ॥

C. I 11/20

A person, who out of delusion laughs in

circumstances where there is no cause for laughter, who licks his lips and whose feet, hands and breathing are cold does not survive.

आह्वयंस्तं समोपस्थं स्वजनं जनमेव वा।
महामोहावृतमनाः पश्यन्नपि न पश्यति॥

C. I 11/21

A person with his mind shrouded with great delusion (indicative of immediate death) does not see things even though his eyes are unaffected and calls out for his relatives and other people who are actually standing nearly in the range of his visual field.

अयोगमतियोगं वा शरीरे मतिमान् भिषक्।
खादीनां युगपद्दृष्ट्वा भेषजं नावचारयेत्॥

C. I 11/22

Persons who are unable to have perception of the objects of senses which are existent and simultaneously having perception of the objects of senses which are nonexistent, should not be treated.

अतिप्रवृद्ध्या रोगाणां मनसश्च बलक्षयात्।
वासमुत्सृजति क्षिप्रं शरीरी देहसंज्ञकम्॥
वर्णस्वरावग्निबलं वागिन्द्रियमनोबलम्।
हीयतेऽसुक्षये निद्रा नित्या भवति वा न वा॥

C. I 11/23-24

Excessive aggravation of the disease and diminution of will-power results in the departure of the soul from his physical above. When the span of life comes to an end there is diminution of complexion, voice as well as the power of digestion, speech, senses and the mind and the person either sleeps always or does not get sleep at all.

भिषग्भेषजपानान्नगुरुमित्रद्विषश्च ये।
वशगाः सर्व एवैते बोद्धव्याः समवर्तिनः॥
एतेषु रोगः क्रमते भेषजं प्रतिहन्यते।
नैषामन्नानि भुञ्जीत न चोदकमपि स्पृशेत्॥

C. I 11/25-26

The person who is having aversion for physicians, medicines, drinks, preceptors and friends should be considered as nearer to death.

पदाः समेताश्चत्वारः संपन्नाः साधकैर्गुणैः।
व्यर्था गतायुषो द्रव्यं विना नास्ति गुणोदयः॥

C. I 11/27

Non availibility of four limbs of treatment indicates death.

परीक्ष्यमायुर्भिषजा नीरुजस्यातुरस्य च।
आयुर्ज्ञानफलं कृत्स्नमायुर्ज्ञे ह्यनुवर्तते॥

C. I 11/28

The physician should examine the span of life of the healthy as well as diseased persons because the entire treatment depends on this.

यस्य गोमयचूर्णाभं चूर्णं मूर्धनि जायते।
सस्नेहं भ्रश्यते चैव मासान्तं तस्य जीवितम्॥

C. I 12/3

If an unctous powder resembling that of cowdung appears on head and disappears after application of oil, he may survive for only one month.

निकषन्निवः यः पादौ च्युतांसः परिधावति।
विकृत्या न स लोकेऽस्मिंश्चिरं वसति मानवः॥

C. I 12/4

Due to morbidity in the body person walk with legs rubbing together and drooping of shoulders does not live longer.

यस्य स्नातानुलिप्तस्य पूर्वं शुष्यत्युरो भृशम्।
आर्द्रेषु सर्वगात्रेषु सोऽर्धमासं न जीवति॥

C. I 12/5

Chest become dried up soon after bath or application of unction, in comparison to other body parts does not live longer for more than a fort night.

यमुद्दिश्यातुरं वैद्यः संवर्तयितुमौषधम्।
यतमानो न शक्नोति दुर्लभं तस्य जीवितम्॥

C. I 12/6

If physician fails to administer proper therapy due to non availibility of remedial measures. Such patient will not survive.

विज्ञातं बहुशः सिद्धं विधिवच्चावचारितम्।
न सिध्यत्यौषधं यस्य नास्ति तस्य चिकित्सितम्॥

C. I 12/7

Inspite of administration of well known therapeutic remedy, which is well tested and administered according to the principles of treatment, if patient does not respond it indicates incurability.

आहारमुपयुञ्जानो भिषजा सूपकल्पितम् ।
यः फलं तस्य नाप्नोति दुर्लभं तस्य जीवितम् ॥
C. I 12/8

Properly administered diet to patient does not produce the desired effect, such patient will succumb to death.

दूताधिकारगम्य अरिष्ट (Dhūtadhikāragamya Ariṣṭa)

दूताधिकारे वक्ष्यामो लक्षणानि मुमूर्षताम् ।
यानि दृष्ट्वा भिषक् प्राज्ञः प्रत्याख्यायादसंयमम् ॥
C. I 12/9

Characteristic features of messenger who comes to take the physician to patient's house indicating death are as follows.

मुक्तकेशेऽथवा नग्ने रुदत्यप्रयतेऽथवा ।
भिषगभ्यागतं दृष्ट्वा दूतं मरणमादिशेत् ॥
C. I 12/10

If messenger arrives physican house as dishevelled, naked, weeping or unattentive should predict the severity of the disease.

सुप्ते भिषजि ये दूताश्छिन्दत्यापि च भिन्दति ।
आगच्छन्ति भिषक् तेषां न भर्तारमनुव्रजेत् ॥
C. I 12/11

If messenger reaches the physician house when physician is asleep or cutting or breaking something.

जुह्वत्यग्निं तथा पिण्डान् पितृभ्यो निर्वपत्यपि ।
वैद्ये दूता य आयान्ति ते घ्नन्ति प्रजिघांसवः ॥
C. I 12/12

If messenger arrives when physician offering oblations to the fire or bolus to the forefathers.

कथयत्यप्रशस्तानि चिन्तयत्यथवा पुनः ।
वैद्ये दूता मनुष्याणामागच्छन्ति मुमूर्षताम् ॥
C. I 12/13

If messenger reaches physician house when physician is thinking about inauspicious things or talking about inauspicious things.

मृतदग्धविनष्टानि भजति व्याहरत्यपि ।
अप्रशस्तानि चान्यानि वैद्ये दूता मुमूर्षताम् ॥
C. I 12/14

If messenger arrives when the physician thinking or speaking about dead, burnt or destroyed things or such other inauspicious substances.

विकारसामान्यगुणे देशे कालेऽथवा भिषक् ।
दूतमभ्यागतं दृष्ट्वा नातुरं तमुपाचरेत् ॥
C. I 12/15

If messenger comes in a place or time similar to the disease in properties.

दीनभीतद्रुतत्रस्तमलिनामसतीं स्त्रियम् ।
त्रीन् व्याकृतींश्च षण्डांश्च दूतान् विद्यान्मुमूर्षताम् ॥
C. I 12/16

If messenger arrives at the physicians house when the fire is burning nearby or during after noon to get remedy for *raktapitta* patient, which coincided with fire and time.

अङ्गव्यसनिन दूतं लिङ्गिनं व्याधितं तथा ।
संप्रेक्ष्य चोग्रकर्माणं न वैद्यो गन्तुमर्हति ॥
C. I 12/17

If messenger is anxious, frightened, hurried, terrified, unclean, unchaste woman, if number of accompanied person is three, possessing deformed organs, eunuch.

आतुरार्थमनुप्राप्तं खरोष्ट्ररथवाहनम् ।
दूतं दृष्ट्वा भिषग्विद्यादातुरस्य पराभवम् ॥
C. I 12/18

If messenger is deformed, ascetic, suffering from some disease, or engaged in harsh activities.

पलालवुसमांसास्थिकेशलोमनखद्विजान् ।
मार्जनीं मुसलं शूर्पमुपानच्चर्म विच्युतम् ॥
C. I 12/19

If messenger reaches the physician house in a vehicle carried by a donkey or camel.

तृणकाष्ठतुषाङ्गारं स्पृशन्तो लोष्टमश्म च ।
तत्पूर्वदर्शने दूता व्याहरन्ति मुमूर्षताम् ॥
C. I 12/20

Before meeting the physician, if the messenger touches the straw, chaff, flesh, bone, hair of the head, small hair of the body, nail, teeth, boom, pounding rod, winnowing tray, shoes, grass, wood pieces, husk, charcoal, earthen clod or stone.

यस्मिंश्च दूते ब्रुवति वाक्यमातुरसंश्रयम् ।
पश्येन्निमित्तमशुभं तं च नानुव्रजेद्भिषक् ॥
C. I 12/21

If the physician comes across bad omen while the messenger is describing the condition of the patient.

तथा व्यसनिनं प्रेतं प्रेतालङ्कारमेव वा।
C. I 12/22

If physician comes across a sorrowful person, dead body, evil spirits.

If physician observes following changes before or during or after reviewing the message are as follows–

भिन्नं दग्धं विनष्टं वा तद्वादीनि वचांसि वा॥
रसो वा कटुकस्तीव्रो गन्धो वा कौणपो महान्।
स्पर्शो वा विपुलः क्रूरो यद्वाऽन्यदशुभं भवेत्॥
तत्पूर्वमभितो वाक्यं वाक्यकालेऽथवा पुनः।
दूतानां व्याहृतं श्रुत्वा घोरो मरणमादिशेत्॥
इति दूताधिकारोऽयमुक्तः कृत्स्नो मुमूर्षताम्।
C. I 12/23-25

Physician seeing something cut, burnt and destroyed or the sound of statements describing such incidents or tastes which are intensely pungent taste, or stinky smell like that of corpse or touch of things which are exceedingly harsh, or such other inauspicious entities.

पथि चौत्पातिकं [Pathi Cautpātikaṁ (Incidents in physician's way to patient's house)]

पथ्यातुरकुलानां च वक्ष्याम्यौत्पातिकं पुनः॥
C. I 12/25

If physician come across certain incidents on his way to patient's house or at the time of arrival at his residence are as follows, which indicates death.

अवक्षुतमथोत्क्रुष्टं-स्खलनं पतनं तथा।
आक्रोशः संप्रहारो वा प्रतिषेधो विगर्हणम्॥
वस्त्रोष्णीषोत्तरासङ्गश्छत्रोपानद्युगाश्रयम्।
व्यसनं दर्शनं चापि मृतव्यसनिनां तथा॥
C. I 12/27

Sneezing, crying, slipping, falling, angry expression, beating, refutation, despising, reviling, fall or defection of cloth, turban, upper garment, umbrella and shoes. Coming across the people mourning due to death of some body.

चैत्यध्वजपताकानां पूर्णानां पतनानि च।
हतानिष्टप्रवादाश्च दूषण भस्मपांशुभिः॥
C. I 12/28

Falling of sacred tree like *caitya* (fig tree), flag staff, flag or pitcher full of water. Arrival of information related to death or other inauspicious things. Pollution by ashes or dust.

पथच्छेदो बिडालेन शुना सर्पेण वा पुनः।
मृगद्विजानां क्रूराणां गिरो दीप्तां दिशं प्रति॥
शयनासनयानानामुत्तानानां च दर्शनम्।
इत्येतान्यप्रशस्तानि सर्वाण्याहुर्मनीषिणः॥
C. I 12/29-30

Crossing the road by cat, dog or snake. Cries of cruel animals like jackals and vultures from the direction of south. Seeing beds, seats, chairs, vessels which are stretched or turned upside down.

आतुरकुले भावावस्थान्तराणि (Āturakule Bhāvāvasthāntarāṇi)– [Bad omens observed in patient residence]

एतानि पथि वैद्येन पश्यताऽऽतुरवेश्मनि।
शृण्वता च न गन्तव्यं तदागारं विपश्चिता॥
इत्यौत्पातिकमाख्यातं पथि वैद्यविगर्हितम्।
इमामपि च बुध्येत गृहावस्थां मुमूर्षताम्॥
C. I 12/31-32

The characteristic features while entering as well as inside the patient's house which indicates bad or omnious nature are as follows–

प्रवेशे पूर्णकुम्भाग्निमृद्बीजफलसर्पिषाम्।
वृषब्राह्मणरत्नान्नदेवतानां च निर्गतिम्॥
C. I 12/33

During entrance into patient's house physician should observe the protentous condition of the patient's house i.e. going out of pitcher full of water, fire, earth, seeds, fruit, ghee, bull, *brāhmaṇa*, precious stones, prepared food and idols of god.

अग्निपूर्णानि पात्राणि भिन्नानि विशिखानि च।
भिषङ् मुमूर्षतां वेश्म प्रविशन्नेव पश्यति॥
C. I 12/34

While entering into patient's house he may see the vessels full of fire which are either broken or with the flameless.

छिन्नभिन्नानि दग्धानि भग्नानि मृदितानि च।
दुर्बलानि च सेवन्ते मुमूर्षोर्वैश्मिका जनाः॥
C. I 12/35

If family members of the patient using substances which are broken, cracked, burnt, split, kneaded or weak.

शयनं वसनं यानं गमनं भोजनं रुतम्।
श्रूयतेऽमङ्गलं यस्य नास्ति तस्य चिकित्सितम्॥
C. I 12/36

The patient whose bed, cloth, vehicle, gait, food and voice bears inauspiciousness.

शयनं वसनं यानमन्यं वाऽपि परिच्छदम्।
प्रेतवद्यस्य कुर्वन्ति सुहृदः प्रेत एव सः॥
C. I 12/37

Arrangement of bed, cloth, vehicle and other instruments and things which are befitting for dead bodies.

अन्नं व्यापद्यतेऽत्यर्थं ज्योतिश्चैवोपशाम्यति।
निवाते सेन्धनं यस्य तस्य नास्ति चिकित्सितम्॥
C. I 12/38

While preparing the food, if the food gets exceedingly damaged or the fire gets extinguished even though there is no wind and the fuel is inadequate quantity or the food is rotten.

आतुरस्य गृहे यस्य भिद्यन्ते वा पतन्ति वा।
अतिमात्रममत्राणि दुर्लभं तस्य जीवितम्॥
C. I 12/39

Breaking of utensils, earthen pot frequently in a kitchen or house.

Signs of Impending Death

While approaching death, the process of destruction is initiated in the body, functions of various limbs and organs of the body get disturbed. Soul desires to leave the body and life which were liked by him earlier and migrate to another body before it succumbs to final darkness (death). As proposed earlier the signs which are manifested and the modifications which take place in the individual and his soul during this time will now be described. This is based upon the scriptural authority. They are as follows :

- Affliction of *prāṇa* (vital breath).
- Clouding of understanding.
- Drainage of strength from limbs.
- Cessation of movements.
- Destruction of sensory faculties.
- Impairment of consciousness.
- Restlessness in the mind.
- Affliction of the mind with fear.
- Deprivation of memory, intellect, *hṛri* (natural modesty) and *śrī* (lustre) of the body.
- Aggravation of *pāpmā* (diseases caused by sinful acts).
- Destruction of *Ojas* (strength) and complexion.
- Radical change in the conduct.
- Change in likings.
- Perversion in the reflected image and lustre of the individual.
- Expulsion of the semen from its normal site.
- Upward movement of *vāyu.*
- Wasting of muscle, tissue and blood.
- Diminution of the *ūṣmās* (factors responsible for the production of heat including digestion and metabolism).
- Dislocation of joints.
- Morbid change in the smells of the body.
- Hoarseness of voice and impairement of complexions.
- Discoloration of the body.
- Dryness in the orifices of the body.
- Appearance of smoke in the head.
- Appearance of a substance like the power of cowdung in the head which is indicative of imminent death.
- Complete cessation of pulsation in the parts (organs) of the body which pulsate constantly in normal conditions.
- Manifestation of attributes of opposite nature in those parts of the body which are either cold, hot, soft or rough; and similar other features.
- Appearance of *puspa* (white spots) in nails and adherence of mud like substance in teeth.
- Mating of eye-lashes and manifestation of

sīmantās (line caused by the parting of hair) in the head.

- Difficulty in obtaining the desired drugs and even if such drugs are obtained, their actions are not manifested in consonance with their potency.
- Sudden manifestation of serious diseases of diverse types and requiring different types of treatment by over powering the strength and *ojas*.
- Manifestation of inauspicious sound, touch, taste, vision, smell, action and thought in the physician while treating such patients.
- Appearance of cruel dreams and manifestation of evil disposition for the patient.
- Hostility of the messenger and change in complexion to that of a dead person.
- Diminution of the normal characteristic features of the body and aggravation of the morbid conditions.
- Manifestation of all the inauspicious signs all of a sudden.

Death information should be kept secret

The physician should not announce the imminence of death without being specially requested for that, even if he is aware of the onset of such bad prognostic signs. Even when specially requested, he should not say anything about the approaching of death because it distress the patient as well as relative.

The wise physician should however refrain from treating such patients having signs of imminent death without making announcement of the approaching death.

Good prognostic signs should be exposed

If the physician comes across auspicious signs of recovery of the patient as indicated by :

- Characteristic features of the messenger.
- *Autpātika* (sudden manifestation of certain auspicious signs).
- Signs in the physician's way to patient's house.
- Characteristic features of the patient's residence.
- Manner and conduct of the patient.
- Availability of drugs at ease, he should make this announcement positively.

Messengers indicating good prognosis

The following types of messengers are to be considered as auspicious, because it signifies good prognosis.

- Who is with good conduct and pleasant behaviour.
- Who is not devoid of any organ of his body.
- Who is of repute and clad with white cloths.
- Who is not completely shaved (having a *śikhā* or a tuft of hair in the crown of the head), and whose hair is not matted.
- Who is similar in caste, dress and action.
- Who has not come in a vehicle carried by camel or donkey.
- Who has not come at the time of *Sandhyā* (morning or evening or twilight).
- Who has come at a time when the cruel planets are not situated in the inauspicious houses of the zodiac.
- Who has come at a time when the *Uttarāphālguṇī*, *Uttaraṣāḍhā*, *Uttarabhādrapadā* and *Rohiṇī* are auspicious and on auspicious *tithis* barring 4th, 9th and 14th days of *pakṣa* (lunar fort-night).
- Who has come at a time other than the noon or midnight when there is no earthquake and when there is no eclipse.
- Who has come to a place which is not defamed and which is devoid of inauspicious characteristics.
- Who is not perturbed.

Incidents observed while entering patient's house indicating good prognosis

If while entering or on his way to patient's house, the physician comes across the following, then he can predict the recovery of the patient.

Curd, *akṣatā* (grains of intact rice), *Brāhmaṇā*, bulls, King, gems, pitchers full of water, white horse, flags and banners dedicated to Indra, fruits, Grains of barley, boys and girls seated on the lap (or boys, girls and earthen plate), an animal of good breed tied to a rope, cultivated land, kindled fire, sweets, white coloured flower, sandle paste, delicious food articles and drinks, a cart fully loaded with human beings, a cow together with a calf, a mare with her calf, a woman with her child, *cakora* (cukor), *siddhārtha* (?), *sārasa* (crane), *oātaka* (sparrow), swain, *śatapatra, cāṣa* (blue joy), peacock, fish, goat, elephant tusk, *priyaṅgu* (*Callicarpa macrophyla Vahl*), ghee, *rucaka* (ornaments of horses), mirror, white mustard, *gorocanā* (bile of cow), fragrance, white complexion, sweet taste, sweet and auspicious voices of animals, birds and human beings, unfolding of umbrellas, flags and banners, prayers, sound of cattle drums, drums and conches, *Puṇyāha* (auspicious sounds), Sounds of vedic recitations and soothing wind from the south direction.

Signs of good prognosis

The following are the auspicious signs indicative of a sure success in the treatment of a patient:–

- Engagement in a auspicious acts, faithfulness and favorable disposition of the patient and his kinsmen.
- Collection of adequate funds and other accessories.
- Attainment of wealth, power and happiness.
- Easy access to desirable objects.
- Easy availability of drugs; and favorable effect of these drugs when administered.

Dreams like climbing on house roof, palace, hill, elephant, bull, horse and human being; vision of the moon, the sun, fire, *Brāhmaṇa,* cow and man of repute; swimming in the ocean; improvement of health; end of sufferings; dialogue with the gods and forefathers in their pleasing mood; vision of white garments and a clean lake; intake of meat, fish poison and *amedhya* (unclean) objects; use of umbrella and mirror; vision of white flowers; riding of horses, bulls and chariots and moving towards the north-east; weeping; rising after fall and; subjugation of enemies.

Moreover appearance of noble qualities, faithful devotion to physicians and *Brāhmaṇa,* subjective feeling of curability of diseases, freedom from anxiety constitute the signs and symptoms of quick recovery from illness. A man of auspicious characteristics attains strength, longevity, happiness and other desirable objects only when he possesses good health.

So, knowledge of ariṣṭa is essential to know about the prognosis & longevity of the patient.

CHAPTER 26

Vyadhi Bala Pareeksha (Assessment of Strength of Disease)

Roga/Vyādhi Bala Parīkṣā is done by observing the following parameters according to Caraka

- *Vikṛti Parīkṣā*– Morbidity of pathologic factors

Roga/Vyādhi Bala Parīkṣā is done by observing the following parameters according to Suśruta

- *Vyādhi Parīkṣā*

Introduction

आतुरस्तु खलु कार्यदेशः । तस्य परीक्षा आयुषः प्रमाणज्ञानहेतोर्वास्याद्, बलदोष प्रमाणज्ञानहेतोर्वा । तत्र तावदियं बलदोष प्रमाण ज्ञानहेतोः; दोषप्रमाणानुरुपो हि भेषज प्रमाणविकल्पो बल प्रमाण विशेषापेक्षो भवति । *C.Vi 8/94*

A patient constitutes *kāryadeśa*. That's why patient should be examined thoroughly to obtain the knowledge of life span, strength and intensity of morbidity. Main intention is to know the strength and the intensity of morbidity because treatment may be initiated after knowing the intensity of the morbidity and strength of patient. For example if stronger medicaments employed to a weaker patient it manifest many adverse reactions resulting into death. On the contrary if mild medicaments employed to a strong person having serious morbidity it may not cure the disease. Ladies, old age persons and children are delicate that's why always mild medicaments must be prescribed.

It is very much essential to prescribe the therapy to the patient, which constitutes *kārya deśa* or the site for the administration of therapies with a view to bring back the normalcy among *doṣa, dhātu* etc. The purpose of examination is to obtain knowledge regarding the span of life, strength and the intensity of morbidity, because if a physician having not examined properly administers intensely potent drug suddenly, it may kill the patient. Weak patients are incapable of resisting strong therapies like medicaments dominating in *agni* and *vāyu mahābhūtas,* application of alkalies and heat (cauterization) and surgical operations. They may cause instantaneous death due to unbearable and over intense impulse of the drug. Keeping this in mind, the physicians should treat the weak patients with drugs which are unharmful, mild, delicate, heavy in progressive order. Mild medicaments should be prescribed to ladies because they have unstable, soft, bare and timid heart and they are delicate, weak and subordinate to others. In brief, prescribed therapy should not be injurious to the body and mind. Stronger therapies that are neither distressing during their digestion nor associated with serious complications may be administered slowly and gradually. Similarly, if weak therapies are administered to a strong individual having a serious disease without proper examination, the disease does not get cured. Hence, the patient should be examined in respect of *prakṛti* (constitution), *vikṛti* (morbidity), *sāra* (excellence of *dhātus*), *saṁhanana* (compactness of organs), *pramāṇa* (measurements of the organs of the body), *sātmya* (suitability), *satva* (psychic conditions), *āhāra śakti* (power of intake and digestion of food), *vyāyāma śakti* (power of performing exercise) and *vayas* (ageing) in order to ascertain his strength and the intensity of the morbidity.

Thus the strength of individuals can be classified depending upon the surperiortity, mediocrity and inferiority of the above mentioned factors, viz. *prakṛti, sāra* etc., except *vikṛti.*

Three types of the strength of the *doṣās* are inferred from the three types of the intensity of morbidity. Thereafter, (depending upon the nature of the *doṣās* involved, three types of medicaments, viz. strong, mild and moderate should be administered. With a view to ascertaining the life span of an individual, symptoms described in *Indriyasthāna* and also in the 8th chapter of *Śārirasthāna* must be taken into account.

Ten fold examinations should be done to understand the overview condition of the person in order to carry out scientifically and methodically therapeutic treatment in a systematic planned manner to get desirable and satisfying successful results. *Vikṛti parīkṣā,* which helps to elicit the factors which are responsible for the genesis of disease (*C.Vi. 8/94*).

Suśruta

Before prescribing any therapeutic procedures, physician should examine his *Āyus* (life span); if he has long span then his *vyādhi* (disease), *ṛtu* (season), *agni* (digestive power), *vayaḥ* (age), *deha* (body build), *bala* (strength), *satva* (mind), *sātmya* (conducive factors), *prakṛti* (constitution), *bheṣaja* (drug) and *deśa* (habitat) *(S. Su 35/3)*.

विकृति परीक्षा (Vikṛti Parīkṣā-Examination of Morbidity)

विकृतितश्चेति विकृतिरुच्यते विकारः। तत्र विकार हेतु-दोष-दूष्य-प्रकृति-देश-काल-बलविशेषैर्लिङ्गतश्च परीक्षेत, न ह्यन्तरेण हेत्वादीनां बलविशेषं व्याधिबलविशेषोपलब्धिः। यस्य हि व्याधेर्दोष-दूष्यप्रकृति-देश-काल-बलसाम्यं भवति, महच्च हेतुलिङ्गबलं, स व्याधिर्बलवान् भवति; तद्विपर्ययाच्चाल्पबलः; मध्यबलस्तु दोषदूष्यादीनामन्यतमसामान्याद्धेतुलिङ्गमध्यबलत्वाच्चोपलभ्यते ॥ *C.Vi. 8/101*

Morbid manifestations of the diseases must be examined in respect to *hetu, doṣās, dūṣyās, prakṛti, deśa, kāla, bala, lakṣaṇa.* Without determining the strength of the causative factors it is not possible to obtain the knowledge regarding the intensity of the disease.

प्रवर बल व्याधि (Pravara Bala Vyādhi)

Contributory factors of the disease like *doṣās, dūṣyās, prakṛti, deśa, kāla, bala* of the individual resemble that of the disease in quality and the causative factors and symptoms are and numerous leading to manifestation severe deadly disease.

मध्यम बल व्याधि (Madhyama Bala Vyādhi)

If either of *doṣās, dūṣyās, prakṛti, deśa* etc. If there is similarity in disease quality, causative factors and symptoms of the disease are of moderate nature leading to manifestation of moderate diseases.

अवर बल व्याधि (Avara Bala Vyādhi)

Contributory factors of the disease like *doṣās, dūṣyās, prakṛti, deśa, kāla, bala* of the individual not resemble to that of the disease in quality and the causative factors and symptoms are few and mild leading to manifestation of mild disease.

In brief *Vikṛti Parīkṣā* refers to morbidity of the susceptible individual and it also helps to ascertain the strength of the pathogenetic factors responsible for the manifestation of disease and also helps to predict the prognosis of the disease.

व्याधि परीक्षा (Vyādhi Parīkṣā - Examination of diseases)

व्याधिविशेषास्तु प्रागभिहिताः सर्व एवैते त्रिविधाः, साध्या, याप्याः, प्रत्याख्येयाश्च। तत्रैतान् भूयस्त्रिधा परीक्षेत्–किमपमौपसर्गिकः, प्राक्केवल, अन्यलक्षण इति। *S.Su 35/18*

Vyādhi is classified into three kinds based on prognosis namely *sādhya, yāpya* and *pratyākhyāya.* It can be examined by three factors i.e. *Aupasargika, prakkevala, anyalakṣaṇa.*

औपसर्गिक रोग (Aupasargika Roga)

तत्र, औपसर्गिको नाम यः पूर्वोत्पन्न व्यधिं जघन्यकालजातो व्याधिरुपसृजति, स, तन्मूल एवोपद्रवसज्ञः। S.Su 35/18

- Excessive ex : It manifests after the manifestation of main disease
- Excessive ex : It's main root i.e. component or pathogenetic factors are one and the same with that of main disease.
- It is also called upadrava.

प्राक्केवल और अन्य लक्षण (*Prakkevala and Anyalakṣaṇa*)

प्राक्केवलो नाम यः प्रागेवोत्पन्नो व्यधिर पूर्वरुपोऽनुपद्रवश्च; अन्यलक्षणो नाम यो भविष्यद् व्याधिरख्यापक, स पूर्वरूप सज्ञः।
S.Su 35/18

Prakkevala vyādhi's are those manifest from the very beginning without premonitory symptoms and complications.

Anyalakṣaṇa vyādhi's are those manifest before the manifestation of actual disease and it is also known as *pūrvarupa.*

भवति चात्र ।
नास्ति रोगो विना दोषैर्यस्मात्तस्माद्विचक्षणः।
अनुक्तमपि दोषाणां लिङ्गैर्व्याधिमुपाचरेत् ॥
S.S.Su. 35/19

Without the involvement of *Doṣa* there won't be any manifestation of the disease. Therefore the intelligent should treat the disease by symptoms of *Doṣā* even if the treatment is not told.

Contributory factors for the development of disease *(saṁprāpti ghaṭakās)* are as follows.

Doṣa

Vāta	*Pitta*	*Kapha*
Samānavāta	*Pācakapitta*	*Tarpaka kapha*
Vyānavāta	*Bhrājakapitta*	*Bhodakakapha*
Prāṇavāta	*Rañjakapitta*	*Śleṣmakakapha*
Apānavāta	*Sādhakapitta*	*Avalambakakapha*
Udānavāta	*Ālocakapitta*	*Kledakakapha*

Assessment of *guṇataḥ, karmataḥ* and *dravyataḥ vṛddhi* and *kṣaya* of *doṣās* must be assessed.

Dūṣya

Saptadhātu
Upadhātu

Mala → Śāririka mala
→ *Saptadhātu mala*

Agni

Jaṭharāgni → Manda, Viṣama, Tikṣṇa
Dhātvāgni → Manda, Viṣama, Tikṣṇa
Bhūtāgni → Manda, Viṣama, Tikṣṇa

Āma

Jaṭharāgnijanya
Dhātvāgnijanya
Bhūtāgnijanya

Srotas

Srotoduṣṭi

Saṅgha
Vimārgagamana
Atipravṛtti
Sirāgranthi

Anumāna Parīkṣā

Vyādhi Bala Parīkṣā can also be done through *Anumān Parīkṣā :*

1. *Doṣa Pramāṇa Viśeṣam Apacāra Viśeṣeṇa* - Quantity of *Doṣa* vitiation is inferred by amount of *Apathya* (unsuitable diet and lifestyle) etc.

CHAPTER 27

Sadhyasadhyatya (Prognosis)

Classification of Diseases Based on Prognosis

साध्यासाध्यविभागज्ञो ज्ञानपूर्वं चिकित्सकः । *S.Su 10/7*

Physician must identify the disease as curable and incurable and accordingly plan the treatment therapeutics to get success.

सुखसाध्यं मतं साध्यं कृच्छ्रसाध्यमथापि च ।
द्विविधं चाप्यसाध्यं स्याद्याप्यं यच्चानुपक्रमम् ।
साध्यानां त्रिविधश्चाल्पमध्यमोत्कृष्टतां प्रति।
विकल्पो, न त्वसाध्यानां नियतानां विकल्पना ।
C.Su 10/9-10

Curable diseases are subdivided into *sukhasādhya* (curable without difficulty) and *kṛcchra sādhya* (curable with difficulty). Incurable diseases are subdivided into two types i.e. *yāpya* (manageable) and *anupakrama* (not manageable). Again curable diseases is subdivided into three types i.e. mild therapeutics, moderate therapeutics and excellent therapeutics. This may not be possible for incurable diseases.

तेषामपहरणं च बहुदोषे शोधनं, मध्यदोषे लङ्घनपाचनम्, अल्पदोषे संशमन-मिति । *S.Su 21/37 (Dalhaṇa)*

In severe morbid condition *śodhana* therapy is neccessary to eliminate excess *doṣās. Langhana* and *pācana* is sufficient to cure moderate degree of morbidity. Palliative therapy is enough for mild degree of morbidity.

सुखसाध्य (Sukha Sādhya)

हेतवः पूर्वरुपाणि रुपाण्यल्पानि यस्य च ।
न च तुल्यगुणो दूष्यो न दोषः प्रकृतिर्भवेत् ॥
न च कालगुणस्तुल्यो न देशो दुरुपक्रमः ।
गतिरेका नवत्वं च रोगस्योपद्रवो न च ॥
दोषश्चैकः समुत्पत्तौ देहः सर्वौषध क्षमः ।
चतुष्पादोपपत्तिश्च सुखसाध्यस्य लक्षणम् ॥
C.Su 10/11-13

Points indicating good prognosis are as follows–

1. Etiology, prodromal symptoms, symptomatology all are mild.
2. Qualities of the involved *dhātu* are not homologous with *doṣa.*
3. There won't be any similarity in the involved *doṣās* with *prakṛti.*
4. There may not be any suitable environment for the development of the disease in respect to season and qualities.
5. Land may not be conducive for the aggravation of *doṣās.*
6. Only one path is involved.
7. Early onset with less duration.
8. Free from complications.
9. Only one *doṣa* is involved in the pathogenesis.
10. Body is strong both physically and mentally to overcome the adverse effects of therapeutics and all strong, moderate and mild medicaments may be employed as per disease.
11. All the four fold therapeutic measures are easily available.
12. Youth, male and one who has control over sense organs. A.S.Su 2/26
13. Vital organs are spared.
14. केवलः समदेहाग्नेः सुखसाध्यतमो गदः । *(S.Su. 35/46)*
    Whose *agni* functions are normal.
15. साध्यान साधयेत् । *(S.Su. 10/6)*
    Treat treatable diseases
16. If it is contrary to place, constitution, suitablity and season. *S.Su 35/45*

कृच्छ्रसाध्य (Kṛcchrasādhya)

निमित्त पूर्वरुपाणां रुपाणां मध्यमे बले । काल प्रकृति दूष्याणां सामान्येऽन्यतमस्य च गर्भिणी वृद्धबालानां नात्युपद्रवपीडितम् । शस्त्रक्षाराग्निकृत्यानामनवं कृच्छ्र देशजम् । विद्यादेकपथं रोगं नातिपूर्ण चतुष्पदम् । द्विपथं नातिकालं वा कृच्छ्रसाध्यं द्विदोषजम् ।
C.Su 10/14-16

The following points favour the diseases which cures with dificulty.

1. Causative factors, premonitory symptoms, symptomatology all are moderate in strength.

2. Qualities of either *kāla, prakṛti & dhātus* are similar to *doṣa.*
3. If disease manifest to pregnant women, old age person and childrens.
4. Moderate complications arises.
5. Disease should be managed by surgery, alkali application and cauterization.
6. Diseases having moderate duration.
7. Vital organs like heart, brain, joints are involved.
8. Persons suffering from diseases in such lands, where their aggravation is mentioned. For example–

   If patient suffering from *vātavyādhi* in *jāṅgaladeśa,* which predominates *vāta,* is very difficult to cure.
9. Diseases involving only one path but not fully supported by four limbs of treatment.
10. There may be an involvement of two systems but not having longer duration.
11. Involvement of two *doṣās.*
12. Treatment may be continued for many days *(A.S.Su 2/20)*
13. Has many incurable symptoms *(A.S.Su 2/20)*

याप्य [Yāpya (Manageable Diseases)]

The diseases which are said to be manageable and the following points suggest in favour of *yāpyatā.*

याप्यान् यापयेत् । *S.Su 10/6*

Manage the manageable diseases.

शेषत्वादायुषो याप्यमसाध्यं पथ्यसेवया । लब्धाल्पसुखमल्पेन हेतुनाऽऽशुप्रवर्तकम् । गम्भीरं बहुधातुस्थं मर्म सन्धिसमाश्रितम् । नित्यानुशायिनं रोगं दीर्घकालमवस्थितम् । विद्याद्विदोषजम् ।

C.Su 10/17-18

The following points indicates the *yāpya* nature of disease :

1. Disease persist for the remaining period of life.
2. Person is managing the life by taking proper therapeutics along with wholes-ome regimen and enjoying little comfort and happiness for the relief to his ailments.
3. Symptoms may aggravate if person adopts unwholesome dietetics and behaviour or by consumption of etiological factors.
4. Deeper *dhātus* are involved i;e *dhātugatajvara, dhātugata kuṣṭha* etc.
5. Vital organs like *marma* and *sandhi* affected.
6. Disease persist continously for longer period of time.
7. Diseases manifest by involving two *doṣās.*
8. Does not get cured without leaving remnants. *A.S.Su 2/21*
9. Diseases manifest due to bad actions of patient. *A.S.Su 2/21*
10. Patient is surviving due to his due span of life. *A.S.Su 2/21*
11. Patient dies, if medication is stopped. *S.Su 23/10-10*

प्रत्याख्येय [Pratyākhyeya (Absolute incurability) or अनुपक्रम (Anupakrama)]

तद्वत् प्रत्याख्येयं त्रिदोषजम् । क्रियापथमतिक्रान्तं सर्वमार्गानुसारिणम् । औत्सुक्यारतिसंमोहकर-मिन्द्रियनाशनम् । दुर्बलस्य सुसंवृद्धं व्याधिं सारिष्टमेव च । *C.Su 10/19-20*

The following points suggest the absolute incurability of the disease are as follows :

1. All the three *doṣās* are involved.
2. Diseases not responding to all therapeutic measures.
3. Spreaded to all directions.
4. Diseases causes excitement, restlessness and patient may become unconscious.
5. All the sense organs afflicted badly.
6. Patient becomes weak and emaciated and disease advances to deeper *dhātus* involving all the *dhātus.*
7. Patient develops some omnious symptomatology indicating death of the patient.
8. Patient develops giddiness, delusion and restlessness *A.S.Su 2/22*
9. परिसंवत्सरोत्थितांश्च विकारान् प्रायशो वर्जयेत् ।

   S.Su. 10/6

   Don't treat the patient which have persisted for more than one year.
10. This stage destroys the potencies of drugs

because of firmness, severity and infiltrating *dhātus* as evil seizer counteracts the *manthrās*. *S.Su 23/15-16*

11. क्रमेणोपचयं प्राप्य धातुननुगतः शनैः । *S.Su. 23/15-16* Gradually affects deeper *dhātus* & become incurable.

Sometimes curable diseases also become incurable or difficult to cure in following persons are as follows– *S.Su. 10/8*

1. श्रोत्रिय– Priests or students
2. नृप– King
3. स्त्री– Women
4. बाल– Children
5. वृद्ध– Aged
6. भीरु– Frightful (timid)
7. राजसेवक– Servants of the king
8. कीतव– Gambler
9. दुर्बल– Debiliated
10. वैद्यविदग्ध– Quacks
11. व्याधिगोपक– Hiding the disease
12. दरिद्र– Poor
13. कृपण– Miser
14. क्रोध– Anger
15. नानामनात्मवता– Those not disciplined in their senses and mind
16. अनाथ– Destitute (orphans)

CHAPTER 28

Digital Health and Artificial Intelligence in the Context of Roganidana

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Medical Technology

Scope of digital health and artificial intelligence in Ayurveda diagnosis and prognosis

Medical Technology

Medical Technology is indispensable to healthcare delivery. It is an integral part of the entire healthcare lifecycle, from the stage of screening/ diagnosing to treatment/care; from restoring patients to normal lives and monitoring their health post treatment. For decades now, with advancement of technology and increasing sophistication of medical devices, the industry has played a major role in bringing down the incidence of disease and improving the overall healthcare system across the world. Globally, the healthcare sector is witnessing rapid advancements in how patients are diagnosed and treated and the Medical Technology industry is at the core of this transformation. The industry is well positioned to revolutionize healthcare in India as well. Using a mix of nascent as well as advanced technologies such as artificial intelligence, remote sensing, 3D printing, e-ICUs, virtual reality, telemedicine and others has the potential to help India's healthcare industry overcome many of the challenges faced by it- be it accessibility .

1. Affordability or quality Health care technology is capable of providing cost -effective solutions at a time when the demands on health
2. Social care services continue to increase. At the moment, the pace of change in the technology is increasing at an exponential rate.
3. Rapid technological change will require retraining and rethinking the roles of clinicians. Both existing and future generations of clinicians will need training in digital literacy to be able to make use of the 3 technology in providing optimum care. The future of healthcare lies in working hand-in-hand with technology
4. Healthcare workers have to embrace emerging healthcare technologies in order to stay relevant in the coming years
5. Taking all this into consideration, Public Health Foundation of India (PHFI), Association of Health Providers India (AHPI), Indian Institute of Science (IISc), Bangalore and Indian Institute of Space Science and Technology (IIST) have collaborated for a Certificate course on Healthcare Technology which will combine theoretical and practical aspects of healthcare technology at every level of healthcare delivery and personnel involved as per requirement.

Definition of artificial intelligence

- The World Health Organization's (WHO's) "Global Strategy on digital health 2020–2025" has emphasized the use of artificial intelligence (AI) to strengthen health systems with its varied range of applications, specifically focusing on the needs of consumers, health professionals, health-care providers, and industry toward empowering the patients and achieving the vision of health for all.
- The concept of AI began in the 1950s, in recent times, it has shown enormous potential in enhancing health-care delivery worldwide with its significant impact in disciplines such as drug discovery, genomics, radiography, pathology, prevention, detecting outbreaks of early epidemics, and health research.
- The Council on AI of the Organization for Economic Cooperation and Development (OECD) defines an AI system as "A machine-based system that can, for a given set of human-

defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments."

AI is any software technology with at least one of the following capabilities:

- Perception – including audio, visual, textual, and tactile (e.g., face recognition), decision-making (e.g., medical diagnosis systems)
- Prediction (e.g., weather forecast), automatic knowledge extraction and pattern recognition from data (e.g., the discovery of fake news circles in social media)
- Interactive communication (e.g., social robots or chatbots), and logical reasoning (e.g., theory development from premises).

Artificial Intelligence and Health Sector

- There are several distinct areas for increasing the efficiency and improving the utility of AI, which include search and optimization capacity, natural language processing, Machine Learning (ML) and probabilistic reasoning, neural networks, and planning and decision-making; of which ML, natural language processing, and neural networks are increasingly being used to evaluate enormous amounts of data.
- AI, as a virtual human body, augments the drug discovery and development process through computer-aided drug-designing methods, which could serve as an efficient tool for the discovery of novel drug compounds.
- High-throughput AI-assisted approaches are being employed in conjunction with bioinformatics to understand in-depth biology and pathophysiology.
- AI in research studies - With the advent of AI systems, clinical studies can be altered and conducted dynamically with the usage of supercomputing AI systems, algorithms, and high-throughput techniques, enabling in-depth analyses of the studies, reducing the fluctuation in results, minimizing errors, and enhancing the output of clinical trials.
- AI integration can also aid in the selection of the study participants based on the patient's eligibility, and suitability, efficient sorting of medical records, and identification of illness phenotype with optimal patient monitoring to ensure timely identification of predictive signs of any drug-induced toxicities.

Artificial Intelligence for Ayurveda

- AI opens up new avenues for exploring the ancient works of the literature of Ayurveda, allowing the screening of herbs or components of traditional formulae, which could disclose the mechanism of action. The search for alternative options for effective and safer lead compound discovery and plant-based traditional medicine could open an immense knowledge base for the exploration of AI in the this sector.
- The medicinal plant extracts, when combined with modern technologies and concepts, could serve as potential reservoirs for innovative drug development.
- Each plant extract is a complex mixture of chemical substances with different forms of ancient medical scripts defining their use; a sophisticated self-learning capable automated machine, like an AI system, will be required to comprehend all available data.
- Assistive AI-based diagnostic models are also expanding in the areas of decision-making models, symptom classification based on varied clinical data, and the generation of pharmacological databases that can be utilized in ethnopharmacology.
- With the present global trend, there is a growing need for the digital integration of Ayurveda with AI technologies with an advanced vision to focus and explore its scope in the global competitive market. Various researches have been conducted for Ayurveda-based disease diagnosis using ML. There is a vivid range of applications in the market for Dosha evaluation, Prakriti assessment, etc. for assisting Ayurveda physicians in appropriate

evaluation of clinical information to make accurate diagnosis and treatment, with an ample amount of journals, e-books, and indexing units such as Digital Helpline for Ayurveda Research Articles (DHARA), AYUSH Research portal, Traditional Knowledge Digital Library (TKDL), Random Uninterrupted Documentation for Retrospective Analysis (RUDRA) Program, AyuSoft, Prakriti Vichaya, and Triskandha Kosha to strengthen the position of Ayurveda in the digital era of AI.

- Data mining, a computational technique involving AI, and database systems has a promising role in the field of Ayurveda. This tool allows for precise knowledge searches utilizing any number of search string combinations to hunt for information related to diseases, causative factors, symptoms, treatment protocols, therapeutic interventions, lifestyle changes, and different treatment modalities. AI and ML can assist to usher in a new era of efficient, rational, and competent drug development in the sector of Ayurveda pharmaceutics.
- A cloud-based representation of several known and yet-to-be-discovered relationships between various biological factors such as genes, symptoms, sickness problems, tissues, animals, and potential treatments can be made to build knowledge graphs.
- Several computer-based Ayurvedic practices are available to assist Ayurvedic doctors in detecting, communicating, and interpreting data for appropriate diagnosis and treatment. The automatic recognition and classification of plant leaves using an Artificial Neural Network, K-Nearest Network, Probabilistic Neural Network, Support Vector Machine, and Decision Tree and identification of indigenous Ayurvedic medicinal plant species using deep learning techniques, image processing, and AI will be beneficial in the sectors of medical area and botanical research.
- The use of robotics in the sector of patient monitoring and diagnostics, robust networking facilities in a rural area and providing consultation services, the use of DNA fingerprinting methods to assess the Prakriti, and use of wearable gadgets coupled with AI technologies to get real-time health-related data, all can be used for the early detection of diseases, offering health-care services, and to predict the outbreak of epidemics.

Examples

- Trained with thousands of images of diabetic retinopathy, AI achieves physician-level sensitivity and specificity in diagnosing referable diabetic retinopathy
- AI also shows the possibility of a clinical decision support system of Alzheimer's disease with training functional magnetic resonance imaging (fMRI)
- The utilization of either AI or deep learning (DL) methods on the various datasets on the drug and food, chemical compounds, or genomic biomarkers was computed and characterized for predicting risk for the prediction of drug-induced liver injury (DILI).
- With the development of AI models, herbal medicine could be precisely customized per patient depending on the symptoms.
- AI algorithms can analyse an individual's genetic, physiological, and lifestyle data to determine their unique Ayurvedic constitution or "prakriti.

Importance of AI in Ayurveda

Technology Develops at a demand of the science for the benefit of end user. Technology adoption in the field of Ayurveda is taking place in various forms-

V' Knowledge :

- Tele conference	- e-CME
- e- lecturing	- RDBMS

V' Problem solution

- Instrumentation for Ayurvedic diagnosis
- Nadi (dosha-pulse) analyzer

- Remote (robotic) surgery

V' Research :

- Drug pathway analysis
- Absorption /target/ action of medicine
- Namburi spot test

Disease based objective parametric evaluation

The AI can be of different types (4 main types) and as per requirement the most desired one can be implemented.

Expert system: This is a concept of behavior that mimics human behavior in order to make decisions, reason, and solve complex problems.

Fuzzy logic: is defined as the concept of human thinking of taking decision in each situation. It makes the decision logically as possibilities of yes/no or true /false.

Neural network /ANN (Artificial neural network): imitates the real network of human being by following the working of human brain. In ANN, neurons behave as biological neurons, and those nodes are connected to each other by links for communication or interaction. Those nodes accept the data and perform different operation and produces output as node value.

Robotics: is an important part of AI where in an artificial agent works in the real-world environment and deals with surrounding. It is a man-made machine that mimics the human thinking process; simply put, it is a machine with human intelligence. AI has a number of advantages, including the reduction of error, increased power, and increased labor efficiency and helps in solving new problems, Improved interface as well as better handling of information.

As of now, there are only very few AI-related applications being used in the Ayurveda Sector such as Nadi Tarangini (a diagnostic instrument for Nadi Pareeksha), Jiva Android App (trend-based diagnostic tool) etc. and most of these are in the private sector.

Applications in Ayurveda, other traditional medicine streams

1. Smart Electronic Health Records

AI-enabled electronic health records can simplify data collection and ensure the correctness of data. This, when coupled with technological assistance like handwriting recognition and Optical Character Recognition can increase the speed of data entry and generate a lot of computer analyzable data. MATLAB's ML handwriting recognition technologies and Google's Cloud Vision API for optical character recognition are just two examples of innovations in this area.

Clinical Data Mining

a. Processing of big data of aggregate morbidity statistics from National Ayush Morbidity and Standardized Terminologies Electronic (NAMASTE), Portal and patient-specific real-time records from Ayush Hospital Information Management System (AHMIS) by Ayush Grid, Ministry of Ayush, and others by private vendors will provide many insights into the reason for encounter (RFE) and treatment trends in the domain of Ayush.

b. Further, such systems will offer the advantage of analyzing concepts like Prakriti of the various patients to the various parameters of data recorded and disease patterns to bring to light the underlying patterns for proving the fundamental principles of systems.

2. Disease Outbreak Prediction

a. The approach mentioned above can be used to compare seasons with disease patterns etc. to prove the relation between the seasonal dosha variations and disease patterns (predictive medicine).

b. This can also be used to predict the outbreak of communicable diseases based on climatic conditions to prevent mortality.

3. Disease Identification/Diagnosis:

Disease diagnosis is one of the foremost applications of Machine learning algorithms. Computer systems like IBM Watson and Google's

DeepMind are using ML in combination with Big Data analysis and AI to do cutting-edge research in medicine. These technologies are also aiming at developing the concept of personalized medicine by analysis of individual health data and predictive analysis. This may be useful in proving the concepts of holistic healthcare which is the hallmark of all Ayush systems. Some other possible fields of application include:

a. Artificial intelligence-based algorithms can be used to develop better Decision Support Systems based on Ayush parameters. The results can be improved by adding machine learning so as to improve their performance based on real-time data.

b. Medical image recognition: Useful especially in the diagnosis of skin disorders, identification of colour changes on the body in case of a disease like vitiligo to assess their progress, urine analysis using traditional methods etc. These when analyzed with the help of Artificial intelligence algorithms can help develop objective evidence for diagnosis and monitoring the effect of treatment. Applications such as Skin Vision (skin cancer detection through image processing using a mobile phone) is an example in this regard.

4. Drug Discovery

Knowledge Discovery by Data Mining of Traditional Repositories:

a. **Pattern Recognition:** Identification of patterns of drug use from the vast literature base of various Ayush systems for new drug development and also understanding the logic of formulations. This can be done by techniques such as frequency analysis, correlation analysis, complex network analysis, and cluster analysis.

b. Analysis of genetic information of medicinal plants may bring to light similarities in properties between plants of different species/genera with similar Ayush parameters (e.g. Rasa, Guna, Virya etc. in Ayurveda).

c. Docking/Simulation studies done using High-Performance Computing can help in understanding the drug action mechanism and also computed aided new drug development from Traditional Knowledge to fast track the process of drug development for emerging new diseases.

d. Identification of pathways of drug action can be done using ML algorithms which is highly useful in the case of systems like Ayush where the drugs have numerous active compounds and which act through multiple pathways in the body.

e. Use of artificial chemical sensors can also be used to assess various parameters such as taste and smell in various compounds to identify the parameters such as Rasa, Guna, Virya etc. through comparative analysis using various drugs.

f. Evidence-based Drug development through a reverse pharmacology approach can be done by analysis of big data from medical records by analysis of drug usage and the outcome of the intervention.

g. Comparative study of usages of the same drug in different systems of medicines such as Ayurveda, Unani, Siddha and Homeopathy.

5. Clinical Research in Ayurveda

The various points mentioned under the above headings can also be used from a research perspective for data collection, analysis and thus generating evidence for the fundamental principles of Ayush systems. Apart from these, the use of big data and machine learning can advance the concepts of evidence-based medicine in Ayush systems by assessing the outcomes of interventions based on various parameters of assessment. (e.g. changes in symptoms after doing Panchakarma).

6. Medical technology/imaging etc.

AI and ML-enabled technologies for assessment of various Ayush parameters such as Nadi (signal processing), Tongue, urine and skin examination (mainly image processing) etc can improve clinical diagnosis and research in AYUSH.

7. Personalized Treatment/Behavioral Modification

Integration of data from IoT-based devices to assess the real-time variations in various parameters for analysis based on fundamental principles of Ayurveda. The development of advanced sensors coupled with wearable gadgets has made the collection of health-related data from patients as well as healthy individuals on a real-time basis possible which if analyzed can bring to light various patterns related to health and disease. Technologies for analysis of various parameters such as pulse examination, amount of sweating, body temperature variations, sleep patterns etc., can be monitored on a real-time basis can be used for this. This data on the long-term analysis can be used for the early detection of diseases and thus reduce the disease burden through preventive interventions.

8. Development of virtual assistants for patient support and medical education using technologies like chatbots.

9. Development of speech recognition and text-to-speech and advanced word search technologies for the Sanskrit language with the help of AI and Deep Learning:

This would be helpful in generating advanced data mining tools for analysis of classical Ayurveda literature, which would be helpful in education, research (by developing theoretical evidence for drug development) etc.

MCQs

Topic 1

1. Separate book on Nidana was written by
   a) Charaka b) Sushruta
   c) Madhavakara d) Vagbhatta
2. Hetu, Linga and Aushadha are collectively known as
   a) Trisutra b) Trihetu
   c) Triaushadha d) Triupathambha
3. The disease (Roga) is due to
   a) Dhatusamya b) Doshavaishamya
   c) Jathragnisamya d) Dosha samya
4. Causal factors responsible for the lesions are included in --------- of disease (i.e. 'why' of disease).
   a) Pathogenesis b) Etiology of disease
   c) Symptoms d) Physical signs
5. Mechanism by which the lesions are produced is termed -------------------of disease (i.e. 'how' of disease).
   a) Pathogenesis b) Etiology of disease
   c) Symptoms d) Physical signs.
6. Functional implications of the lesion felt by the patient are --------
   a) Pathogenesis b) Etiology of disease
   c) Symptoms d) Physical signs.
7. Those discovered by the clinician are the ----
   a) Pathogenesis b) Etiology of disease
   c) Symptoms d) Physical signs.
8. Virtually all forms of disease start with molecular or structural alterations in cells, a concept first put forth
   a) Matthew Baillie b) Santiago Ramrny Cajal
   c) Robin Warren d) Rudolf Virchow
9. The relationship between heredity and disease are comes under --------
   a) Molecular pathology
   b) Geographic pathology
   c) Human genetics
   d) Chemical Pathology
10. The study of organs and tissues removed at post-mortem for medicolegal work and for determining the underlying sequence and cause of death described under -------
    a) Cytopathology
    b) Forensic pathology and autopsy work
    c) Chemical Pathology
    d) Experimental Pathology

Answer

1. c 2. a 3. b
4. b 5. a 6. c
7. d 8. d 9. c
10. b

Topic 2

1. Dashavidha Pariksa (Charaka) are done to know
   a) Ayupramana Bala dosha pramana
   b) Rogavinischaya
   c) Rogaupadrava
   d) Aristhalakshana
2. Roga Pariksha is known as-
   a) Nimitta
   b) Panchanidan (rogavabheda hetava)
   c) Nadi Pariksha
   d) Upashaya and Anupashaya
3. Darshana, Prashna & Sprasha pareeksha mentioned in
   a) Charaka and Vagbhatta
   b) Vagbhatta only
   c) Charaka Only
   d) Yogaratnakar
4. Chaturvidha Pariksha comprises
   a) Aptopadesha, Pratyhaksha, Anuman and Prashna
   b) Aptopadesha, Pratyhaksha, Anuman and Sparsha
   c) Aptopadesha, Pratyhaksha, Anuman and Darshana
   d) Aptopadesha, Pratyhaksha, Anuman and Yukti

5. Shadvidha Pariksha comprises
   - a) Panchendriya Pariksha and Darshana
   - b) Panchendriya Pariksha and Sparshana
   - c) Panchendriya Pariksha and Prashna
   - d) Panchendriya Pariksha and Anuman
6. Astasthana nirikshana is described by
   - a) Madhava Nidan
   - b) Charaka
   - c) Yogaratnakar
   - d) Sushruta
7. Satmya pariksha included under.....
   - a) Chaturvidha Pariksha
   - b) Shadvidha Pariksha
   - c) Dashavidha Pariksa
   - d) Astasthana nirikshana
8. Ahara shakti included under _______
   - a) Sushrutokta Dvadasha Pariksha
   - b) Dashavidha Pariksha
   - c) Shadvidha Pariksha
   - d) Trividha Pariksha
9. Cakshurindriya Pariksha described under
   - a) Dwividha Pariksha
   - b) Shadvidha Pariksha
   - c) Both A & B
   - d) Drik Nirikshana
10. त्रिभिरेतैर्विज्ञानोपायै रोगाः प्रायशो वेदितव्या इत्येके; तत्तु न सम्यक्- described by
    - a) Madhava Nidan b) Charaka
    - c) Yogaratnakar d) Sushruta
11. आतुरमभिपश्येत् स्पृशेत् पृच्छेच्च are three types of Atura Pariksha described by
    - a) Madhava Nidan
    - b) Charaka
    - c) Sushruta
    - d) Yogaratnakar

Answer

1. a 2. b 3. a
4. d 5. c 6. c
7. c 8. b 9. c
10. d 11. c

Topic 3

1. Mutrapariksha was first mentioned in
   - a) Yogaratnakara
   - b) Madhava Nidana
   - c) Sharangadhara Samhita
   - d) Sushruta
2. According to Yogaratnakara the Gati of Paittika Nadi is like
   - a) Manduka b) Jalauka
   - c) Sarpa d) Hamsa
3. This is one of the Shadavidha Pariksha
   - a) Prakriti b) Deha
   - c) Prashna d) satwa
4. Nadipariksha is described under
   - a. Chaturvidha Pariksha
   - b. Shadvidha Pariksha
   - c. Dashavidha Pariksa
   - d. Astasthana nirikshana
5. Varna can be examined by the following Pariksha
   - a) Darshana b) Sparshana
   - c) Pramana d) Nadi Pariksha
6. In case of Pitta Prakriti the Kostha will be
   - a) Mrudu b) Madhyama
   - c) Krura d) Sama
7. Akriti Parikhsa is included in ____Pairiksha
   - a) Trividha
   - b) Shadvidha
   - c) Astasthana nirikshana
   - d) Dashavidha
8. The Bala of the patient is estimated by
   - a) Exercise b) Height
   - c) Weight d) Nature
9. शीतोष्णश्लक्ष्णकर्कशमृदुकठिनत्वादयः comes under
   - a) Sparshanendriya Pariksha
   - b) Ghranendriya Pariksha
   - c) Rasanendriya Pariksha
   - d) Chakshurendriya Pariksha
10. Which of the following is Rogi Parikhsa ?
    - a) Lakshana b) Nidana
    - c) Samprapti d) Darshana

11. Which of the following is Roga Pariksha
a) Desha b) Kala
c) Hetu d) Prakriti

12. Jihva netra kapolanam jalam is the dhatumala of which Dhatu according to Sharangadhara
a) Rakta dhatu b) Mamsa dhatu
c) Rasadhatu d) Meda dhatu

13. In Kaphaja Prikriti the character of hair will be
a) Ruksha b) Aruna Varna
c) Snigdha d) Akala Palita

14. ____Prakriti person is called as Sadaturah
a) Kapha b) Vata
c) Pitta d) Kapha Pittaja

15. Taila Bindu Pariksha is mentioned under ________ Pariksha
a) Mutra b) Shukra
c) Rakta d) Kapha

17. हेत्वर्तिसात्म्याग्निबलं परीक्ष्यं वचनाद्बुधैः indicates
a) Prashna Pariksha b) Drik Pariksha
c) Sparshana Pariksha d) Darshana Pariksha

18. वयोवर्णशरीराणामिन्द्रियाणां च indicates
a) Prashna Pariksha b) Drik Pariksha
c) Sparshana Pariksha d) Darshana Pariksha

19. शरीरोपचयापचयायुर्लक्षणबलवर्णविकारादयः indicates
a) Prashna Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Ghranendriya Pariksha

20. कालं जातिं सात्म्यमातङ्कसमुत्पत्तिं वेदनासमुच्छ्रायं बलमन्तरग्निं -- indicates
a) Prashna Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Rasanendriya Pariksha

21. प्रमेहादिषु रसविशेषाः indicates
a) Prashna Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Rasanendriya Pariksha

22. अरिष्टलिङ्गादिषु व्रणानामव्रणानां च गन्धविशेषाःindicates
a) Ghranendriya Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Rasanendriya Pariksha

23. वातमूत्रपुरीषाणां प्रवृत्तिमप्रवृत्तिं कालप्रकर्षादींश्च विशेषान् indicates
a) Prashna Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Rasanendriya Pariksha

24. तोदनभेदनच्छेदनादिवेदनाविशेषाः comes under
a) Prashna Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Rasanendriya Pariksha

25. कण्डूगुरुत्वादिवेदनाविशेषाः comes under
a) Prashna Pariksha
b) Chakshurindriya Pariksha
c) Sparshana Pariksha
d) Rasanendriya Pariksha

26. नीलपीतवर्णत्वं comes under
a) चक्षुरिन्द्रियग्राह्यं b) रसनेन्द्रियग्राह्यं
c) घ्राणेन्द्रियग्राह्यम् d) प्रश्नग्राह्याः

27. श्लेष्मसदृशेषु विज्ञानाभ्युपायेषु स्निग्धपैच्छिल्यादिकं comes under
a) चक्षुरिन्द्रियग्राह्यं b) रसनेन्द्रियग्राह्यं
c) घ्राणेन्द्रियग्राह्यम् d) प्रश्नग्राह्याः

28. Ranjaka pitta is the dhatumala of which Dhatu according to Sharangadhara
a) Rakta dhatu b) Mamsa dhatu
c) Rasadhatu d) Meda dhatu

29. Nakha netra malam is the dhatumala of which Dhatu according to Sharangadhara
a) Rakta dhatu b) Mamsa dhatu
c) Asthi dhatu d) Meda dhatu

30. Vaktra Snigdhatwam is the dhatumala of which Dhatu according to Sharangadhara
a) Rakta dhatu b) Mamsa dhatu
c) Majja dhatu d) Meda dhatu

31. आतुरमभिपश्येत्स्पृशेत्पृच्छेच्च। त्रिभिरेतैर्विज्ञानोपायै रोगाः are the three types of rogiroga pariksha described by
   a) Yogaratnakara
   b) Madhava Nidana
   c) Sharangadhara Samhita
   d) Sushruta

Answer

1. a	2. a	3. c
4. d	5. a	6. a
7. c	8. a	9. a
10. d	11. c	12. c
13. b	14. c	15. b
16. a	17. a	18. d
19. b	20. a	21. d
22. a	23. a	24. a
25. a	26. a	27. a
28. a	29. c	30. c
31. d		

Topic 4

1. What is the Purvaroopa based differential diagnosis Raktapittaof from Prameha
   a) Haridravarnamutra
   b) Raktavarnamutrawitoutpramehapurvarupa
   c) Both A and B
   d) None
2. Rovsing's sign is the diagnostic feature of
   a) Meckel diverticulitis
   b) Pelvic inflammatory disease
   c) Ulcerative colitis
   d) Appendicitis
3. If there is hemiparesis and it is acute in onset, there is most likely an
   a. Occlusion of one of the cerebral arteries
   b. Multiple sclerosis
   c. Brain tumor
   d. Hematoma
4. Skull fracture, particularly if it involves the cribriform plate cause
   a. Hyperosmia b. Multiple sclerosis
   c. Anosmia d. Phantosmia
5. Hematuria would suggest—
   a. Glomerulonephritis
   b. Polycystic kidneys
   c. Dissecting aneurysm.
   d. Prostatic hypertrophy

Answer

1. c	2. d	3. a
4. c	5. a	

Topic 5

1. --------------पुनर्हेतुव्याधिविपरीतानां विपरीतार्थकारिणां चौषधाहारविहाराणामुपयोगः सुखानुबन्धः Fill the gap
   a. असात्म्य b. सात्म्य
   c. अनुपशयो d. उपशयः
2. Upashaya is classified into
   a) 3 b) 18
   c) 12 d) 5
3. पच्यमाने पित्तप्रधाने शोथे विदाह्यन्नं, is an example of
   a) हेतुविपरीतमन्नं b) हेतुव्याधिविपरीतार्थकार्यन्नं
   c) हेतुव्याधिविपरीतमन्नं d) व्याधिविपरीतार्थकार्यन्नं
4. गूढलिङ्गं व्याधि -------- Fill the gap
   a) क्षयमरिष्टैः b) मुपशयानुपशयाभ्यां
   c) कल्याणाभिनिवेशेन d) सत्त्वमविकारेण
5. पित्तप्रधाने पच्यमाने शोथे पित्तकर उष्ण उपनाहः is an example of
   a) व्याधिविपरीतमन्नं b) व्याधिविपरीतमौषधं
   c) हेतुविपरीतार्थकार्यौषधं d) हेतुविपरीतार्थकार्यन्नं
6. छर्द्यां वमनसाध्यायां वमनार्थं प्रवाहणं is an example of
   a) हेतुविपरीतो विहारो
   b) व्याधिविपरीतो विहारो
   c) हेतुव्याधिविपरीतार्थकारी विहारो
   d) व्याधिविपरीतार्थकारी विहारो
7. दिवास्वप्नोत्थकफे रात्रौ जागरणं, is an example of
   a) हेतुविपरीतो विहारो
   b) व्याधिविपरीतो विहारो
   c) हेतुव्याधिविपरीतार्थकारी विहारो
   d) व्याधिविपरीतार्थकारी विहारो

8. उदावर्ते प्रवाहणं is an example of
   a) हेतुविपरीतो विहारो
   b) व्याधिविपरीतो विहारो
   c) हेतुव्याधिविपरीतार्थकारी विहारो
   d) व्याधिविपरीतार्थकारी विहारो

9. वातोन्मादे सन्त्रासनं is an example of
   a) हेतुविपरीतो विहारो
   b) व्याधिविपरीतो विहारो
   c) हेतुव्याधिविपरीतार्थकारी विहारो
   d) व्याधिविपरीतार्थकारी विहारो

10. छर्द्यां वमनकारकं मदनफलादि; is an example of
   a) व्याधिविपरीतार्थकार्यौषधं b) हेतुविपरीतमौषधं
   c) व्याधिविपरीतमौषधं d) हेतुविपरीतार्थकार्यौषधं

11. अतीसारे स्तम्भनं पाठादि is an example of
   a) व्याधिविपरीतार्थकार्यौषधं b) हेतुविपरीतमौषधं
   c) व्याधिविपरीतमौषधं d) हेतुविपरीतार्थकार्यौषधं

12. शीतकफजे ज्वरे शुण्ठ्याद्युष्णं भेषजं, is an example of
   a) व्याधिविपरीतार्थकार्यौषधं b) हेतुविपरीतमौषधं
   c) व्याधिविपरीतमौषधं d) हेतुविपरीतार्थकार्यौषधं

13. अग्निना प्लुष्टेऽगुर्वादिना लेपः is an example of
   a) व्याधिविपरीतार्थकार्यौषधं b) हेतुविपरीतमौषधं
   c) व्याधिविपरीतमौषधं d) हेतुविपरीतार्थकार्यौषधं

14. यथा- मद्यपानोत्थे मदात्यये मदकारकं मद्यं; is an example of
   a) हेतुविपरीतमन्त्रं b) हेतुव्याधिविपरीतार्थकार्यन्त्रं
   c) हेतुव्याधिविपरीतमन्त्रं d) व्याधिविपरीतार्थकार्यन्त्रं

15. अतीसारे विरेककारकं क्षीरं, is an example of
   a) हेतुविपरीतमन्त्रं b) हेतुव्याधिविपरीतार्थकार्यन्त्रं
   c) हेतुव्याधिविपरीतमन्त्रं d) व्याधिविपरीतार्थकार्यन्त्रं

16. श्रमानिलजे ज्वरे रसौदनः is an example of
   a) हेतुविपरीतमन्त्रं b) हेतुव्याधिविपरीतार्थकार्यन्त्रं
   c) हेतुव्याधिविपरीतमन्त्रं d) व्याधिविपरीतार्थकार्यन्त्रं

17. अतीसारे स्तम्भनं मसूरादि is an example of
   a) व्याधिविपरीतमन्त्रं b) हेतुव्याधिविपरीतार्थकार्यन्त्रं
   c) हेतुव्याधिविपरीतमन्त्रं d) व्याधिविपरीतार्थकार्यन्त्रं

18. शीतोत्थज्वरे उष्णा ज्वरघ्नी च यवागूः, is an example of
   a) व्याधिविपरीतमन्त्रं b) हेतुव्याधिविपरीतार्थकार्यन्त्रं
   c) हेतुव्याधिविपरीतमन्त्रं d) व्याधिविपरीतार्थकार्यन्त्रं

19. व्यायामजनितसम्मूढवाते जलप्रतरणादिरूपो व्यायामः is an example of
   a) हेतुविपरीतो विहारो
   b) व्याधिविपरीतो विहारो
   c) हेतुव्याधिविपरीतार्थकारी विहारो
   d) व्याधिविपरीतार्थकारी विहारो

20. वातशोथे वातहरं शोथहरं च दशमूलं is an example of
   a) व्याधिविपरीतार्थकार्यौषधं b) हेतुविपरीतमौषधं
   c) हेतुव्याधिविपरीतमौषधं d) हेतुविपरीतार्थकार्यौषधं

21. स्निग्धदिवास्वप्नजायां तन्द्रायां रूक्षं तन्द्राविपरीतं च रात्रिजागरणं is an example of
   a) हेतुविपरीतो वहिारो
   b) व्याधिविपरीतो विहारो
   c) हेतुव्याधिविपरीतार्थकारी विहारो
   d) हेतुव्याधिविपरीतो विहारो

Answer

1. d 2. b 3. b
4. b 5. c 6. d
7. a 8. b 9. c
10. a 11. c 12. b
13. d 14. b 15. d
16. a 17. a 18. c
19. c 20. c 21. d

Topic 6

1. तत्त्रिविधम्- असात्म्येन्द्रियार्थसंयोगः, प्रज्ञापराधः, परिणामश्चेति are collectively known as
   a) Triayatana b) Trimala
   c) Tridanda d) Trayopsthambha

2. Hetu is of ________types Charaka
   a) One b) Two
   c) Three d) Four

3. Vyabhichari Nidana is
   a) Weak aetiology
   b) Strong aetiology
   c) complicated aetiology
   d) None

4. The following is the Sannikrishta Nidanafor Vataprakopa
   a) Mridbhakshana b) Visha
   c) Vardhakaya d) All of these

5. Sannikrishta and Viprakrishta are the types of
   a) Purva Rupa b) Nidana
   c) Rupa d) Upashaya

6. Tiktasyata is caused by the following Dosha Prakopa
   a) Kapha b) Vata
   c) Pitta d) Rakta

7. Which of the following Deshas increases Kapha
   a) Jangala b) Anupa
   c) Sadharana d) None

8. Number of types of Agni as per Charaka are
   a) Three b) Ten
   c) Seven d) Thirteen

9. Ashayapakarsha is a contribution of
   a) Susruta b) Madhavakara.
   c) Vagbhata d) None

10. Murccha, daha, bhrama, shoola, vidaha, sitakamita, chardi and vidagdata are the characteristic feature of
   a. Kaphavrita Pranavata
   b. Pittavrita Pranavata
   c. Pittavrita Udanavata
   d. Pittavrita Apanavata

11. Vaivarnya, vak-swaragraha, dauralya, gurugatrata and aruchi are the characteristic feature of
   a. Kaphavrita Pranavata
   b. Pittavrita Pranavata
   c. Pittavrita Udanavata
   d. Pittavrita Apanavata

12. विक्रियामापन्नस्त्रिविधो भवति- विषमो वातेन, तीक्ष्णः पित्तेन, मन्दः has been described in context to -------
   a. Srotas b. Ama
   c. Agni d. Ojas

13. यथाकालमुपयुक्तमन्नं सम्यक् पचति me Indicates
   a. Mandagni b. Samagni
   c. Vishamagni d. Tikshnagni

14. कदाचित् सम्यक् पचति, कदाचिदाध्मानशूलोदावर्तातिसारजठरगौरवान्त्रकूजनप्रवाहणानि कृत्वा स Indicates
   a. Mandagni b. Samagni
   c. Vishamagni d. Tikshnagni

15. प्रभूतमप्युपयुक्तमन्नमाशु पचति स Indicates
   a. Mandagni b. Samagni
   c. Vishamagni d. Tikshnagni

16. स मुहुर्मुहुः प्रभूतमप्युपयुक्तमन्नमाशुतरं पचति, पाकान्ते च गलताल्वोष्ठशोषदाहसन्तापाञ्जनयति Indicates
   a. Mandagni b. Tikshnagni
   c. Vishamagni d. Atyagni

17. यस्त्वल्पमप्युपयुक्तमुदरशिरोगौरवकासश्वासप्रसेकच्छर्दिगात्रसदनानि कृत्वा महता कालेन पचति, स Indicates
   a. Mandagni b. Tikshnagni
   c. Vishamagni d. Tikshnagni

17. माहिषैश्च क्षीरदधिसर्पिर्भिः is the treatment advised
   a. Mandagni b. Tikshnagni
   c. Vishamagni d. Atyagni

19. स्निग्धाम्ललवणैः क्रियाविशेषैः प्रतिकुर्वीत is the treatment advised
   a. Mandagni b. Tikshnagni
   c. Vishamagni d. Atyagni

20. मधुरस्निग्धशीतैर्विरिकैश्च is the treatment advised
   a. Mandagni b. Tikshnagni
   c. Vishamagni d. Atyagni

21. कटुतिक्तकषायैर्वमनैश्च is the treatment advised
   a. Mandagni b. Atyagni
   c. Vishamagni d. Tikshnagni

22. मुद्गमसूराढकीहरेणुकलायनिष्पावा are the aggravating which dosha
   a. Pitta b. Vata
   c. Kapha d. Raja

23. तिलतैलपिण्याककुलत्थसर्षपातसीहरितकशाकगोधा are the aggravating which dosha
   a. Pitta b. Vata
   c. Kapha d. Raja

24. हायनकयवकनैषधेत्कट- माषमहामाषगोधूमतिलपिष्टविकृति are the aggravating which dosha
   a. Pitta b. Vata
   c. Kapha d. Raja

25. बह्वल्पाकालभोजनम् indicates
   a. Anashana b. Vishamashan
   c. Adhyasana d. Samashan

26. अल्पभोजनमुपवासश्च indicates
   a. Anashana   b. Vishamashan
   c. Adhyasana   d. Samashan

27. साजीर्णभोजनम् indicates
   a. Anashana   b. Vishamashan
   c. Adhyasana   d. Samashan

28. स्रंसभ्रंसव्याससङ्गभेदसादहर्षतर्षकम्पवर्तचालतोदव्यथाचेष्टादीनि are features of which dosha vriddhi ?
   a. Pitta   b. Vata
   c. Kapha   d. Rajas

29. दाहौष्ण्यपाकस्वेदक्लेदकोथकण्डूस्रावरागा are features of which dosha vriddhi ?
   a. Pitta   b. Vata
   c. Kapha   d. Rajas

30. श्वैत्यशैत्यकण्डूस्थैर्यगौरवस्नेहसुप्तिक्लेदोपदेहबन्धमाधुर्यचिरकारित्वानि are features of which dosha vriddhi ?
   a. Pitta   b. Vata
   c. Kapha   d. Rajas

32. तत्रास्थापनानुवासनं तु खलु सर्वत्रोपक्रमेभ्यो.......प्रधानतमं मन्यन्ते भिषजः fill in the blanks
   a. देश   b. वाते
   c. पित्ते   d. श्लेष्मणि

32. विरेचनं तु सर्वोपक्रमेभ्यः.......प्रधानतमं मन्यन्ते भिषजः
   a. देश   b. वाते
   c. पित्ते   d. श्लेष्मणि

33. वमनं तु सर्वोपक्रमेभ्यः.............प्रधानतमं मन्यन्ते भिषजः
   a. देश   b. वाते
   c. पित्ते   d. श्लेष्मणि

Answer

1. a	2. c	3. a
4. d	5. b	6. c
7. b	8. d	9. b
10. b	11. b	12. c
13. b	14. c	15. d
16. d	17. a	18. d
19. c	20. b	21. a
22. b	23. a	24. c
25. b	26. a	27. c
28. b	29. a	30. c
31. b	32. c	33. d

Topic 7

1. Hridrog is _________ Margagata Vyadhi
   a) Bahya   b) Abhyantara
   c) Madhyama   d) None

2. Following is the Bahya Rogamargagata Vyadhi
   a) Kushtha   b) Pravahika
   c) Sandhivata   d) Mutrakrcchra

3. The number of Rogamargas as per Charaka
   a) Three   b) Four
   c) Two   d) Five

4. Marmagata Rogas are from _________ Rogamarga
   a) Bahya   b) Abhyantara
   c) Madhyama   d) Kostha

5. Rogamarga are:
   a) 2   b) 4
   c) 3   d) 5

6. Pakshavadha, Rajayakshma comes under:
   a) Sakhagataroga
   b) Madhyamargagatroga
   c) Kosthagataroga
   d) None of this

7. Shakha, Marmasthi Sandhi and Koshta are known as
   a) Three Roga Margas
   b) Thrividha Chikitsa sutra
   c) Trividha upasthambha
   d) Trividha ayatana

Answer

1. c	2. a	3. a
4. c	5. c	6. b
7. a		

Topic 8

1. Following is one among four Srotodushti Lskhanas
   a) Pitanetra
   b) Vimargagamana
   c) Shwasa-Kasa
   d) Pitamutra

2. 'Kha' Vaigunya observed in which stage of Kriyakala
   a) Sthanasamshraya b) Prasara
   c) Prakopa d) Bheda
3. Siradhamani vivarjitam explained in context to
   a. Kostha b) Srotas
   c. Grahani d) Hridaya
4. The number of bahirmukha srotas in females are
   a) 7 b) 9
   b) 11 d) 12
5. Types of srotodusti lakshana are
   a) 2 b) 4
   c) 5 d) 5
6. Which one of the following is the type of samanya srotodusti lakshana
   a) Alasya b) Agnimadhya
   c) parva bheda d) Sanga
7. Sashabdashwasa seen in which strotodusti
   a) Pranavaha srotodushti
   b) Udakvaha srotodushti
   c) Rasavaha srotodushti
   d) Sukravaha srotodushti
8. Ruk parvana, bhrama,Murcccha, darshanam, tamasasthatha are the symptoms of
   a) Majjavaha srotodushti
   b) Asthivaha srotodushti
   c) Medovaha srotodushti
   d) Rasavaha srotodushti

Answer

1. b 2. a 3. b
4. d 5. b 6. d
7. a 8. a

Topic 9

1. Kodravebhyovishasyeva is mentioned regarding
   a. Sthavaravisha b. Ama
   c. Avarana d. Amavata
2. Amapradoshabheda
   a. 2 b. 3
   c. 4 d. 6
3. Akala Valipalitha Darshana indicates
   a. Majjavaha srotodushti
   b. Asthivaha srotodushti
   c. Medovaha srotodushti
   d. Rasavaha srotodushti
4. Avilastantulah sthyanah kantha etc indicates
   a. Sama kapha b. Sama Pitta
   c. Sama Vata d. Sama Rasa
5. Pakvam Vigandhi Vijneya indicates
   a. Sama kapha b. Sama Pitta
   c. Sama Vata d. Sama Rasa

Answer

1. b 2. a 3. d
4. a 5. b

Topic 10

1. दुर्गान्धिहरितंश्यावंपित्तमम्लंघनंगुरु। आम्लिकाकण्ठहृद्दाहकरं
   a) Sama pitta lakshana
   b) Nirama pitta lakshana
   c) Pittavriddhi lakshana
   d) Urdwaka Amlapitta
2. Tiktakatukamutra indicates
   a) Samamutralakshama
   b) Nirama mutra lakshana
   c) Mutrakshaya d) Mutravrddhi
3. Vibhandagni sada stambhantra kujanai indicates
   a. Sama kapha b. Sama Pitta
   c. Sama Vata d. Sama Rasa
4. Ninditani pramehanam purvarupani indicates
   a. Majjavaha srotodushti
   b. Asthivaha srotodushti
   c. Medovaha srotodushti
   d. Rasavaha srotodushti
5. Dantasthi bheda shulam indicates
   a. Majjavaha srotodushti
   b. Asthivaha srotodushti
   c. Medovaha srotodushti
   d. Rasavaha srotodushti

Answer

1. a 2. b 3. c
4. c 5. b

Topic 11

1. In nephrotic syndrome which characteristics found
   a. Albumin increase, Serum Cholesterol decrease
   b. Globulin Decrease, Serum Cholesterol decrease
   c. Albumin decrease, Globulin increase
   d. Albumin increase, Globulin decrease
2. Purvarupa lakshana observed in which stage of Kriyakala
   a) Sthanasamshraya b) Prasara
   c) Prakopa d) Bheda
3. Types of Purvarupa
   a) 2 b) 3
   c) 4 d) 5
4. Excessive yawning is the specific purvarupa of
   a) Paittika jwara b) Vatika jwara
   c) Kaphaja jwara d) Sannipatika jwara
5. Avyakta purvarupa seen in which among the following diseases
   a) Vayatavyadhi
   b) Urakshata
   c) Vayatavyadhi & Urakshata
   d) Sosha
6. Elimination of yellowish or blood mixed urine without Prameha purvarupa is the differential diagnostic feature of Prameha with ________
   a) Raktapitta
   b) Kshata ksheena
   c) Mutra krcchra
   d) Mutraghata

Answer

1. c 2. a 3. a
4. b 5. c 6. a

Topic 12

1. Sira Shaithilya is the feature of
   a) RaktadhatuKshaya
   b) Mamsadhatukshaya
   c) Medodhatuvriddhi
   d) None of these
2. According to Vagbhatta Dushyas are
   a) Doshaas b) Dhatus
   c) Malas d) b& c
3. According to Sushruta impairement of which Dhatu cause Sthula and Krisha
   a) Rasa Dhatu Nimitta
   b) Rakta Dhatu Nimitta
   c) Medo Dhatu Nimitta
   d) Shukra Dhatu Nimitta
4. Palitya comes under which one of the following Pradoshaja Rogas
   a) Rasadhatu b) Raktadhatu
   c) Mamsadhatu d) Medodhatu
5. The Moola of Sveda Vaha Srotas are Lomakupa and
   a) Rasa b) Rakta
   c) Mamsa d) Meda
6. भुत्त्वाचस्वपतांदिवा- is the causative factor for which srotodusti
   a) Rasa vahasrotas b) Rakta vahasrotas
   c) Mamsa vahasrotas d) Meda vahasrotas
7. अभिष्यन्दीनिभोज्यानिस्थूलानिचगुरूणिच- is the causative factor for which srotodusti
   a) Rasa vahasrotas b) Rakta vahasrotas
   c) Mamsa vahasrotas d) Meda vahasrotas
8. Complete the verse of Charakasamhita, Samanya-GunaAbhyaso hi Dhatunam....... Karanam
   a) Swasthya b) Samya
   c) Kshaya d) Vriddhi
9. Khamala is Mala of which Dhatu?
   a) Rakta Dhatu b) Medo Dhatu
   c) Majja Dhatu d) Mamsa Dhatu
10. Twak Sneha is Mala of
    a) Rasa Dhatu b) Medo Dhatu
    c) Majja Dhatu d) MamsaDhatu

11. Pliha Vriddhiis Lakshana of-
a. Mamsa Vriddhi b. Medo Vriddhi
c. Majja Kshaya d. MedoKshaya

Answer

1. a 2. d 3. a
4. b 5. d 6. c
7. c 8. d 9. d
10. c 11 d

Topic 13

1. Synonyms of Samprati are
a) Jati, Agati b) Nimitta, Ayatana
c) Upashaya, Pathya d) Chihna, Aktiti

2. तस्माद् व्याधिजनकदोषव्यापारविशेषयुक्तं व्याधिजन्मेह ....शब्देन वाच्यम्
a) Nidana b) Samprapti
c) Upashaya d) PurvaRupa

3. Types of Samprapti as per Caraka
a) 5 b) 7
c) 6 d) 8

4. Samprapti indicates the proportional analysis of the qualities of the doshas
a) Pradhanya b) Vikalpa
c) Bala d) Vidhi

5. ....पुनरेवंदुष्टोदोषस्तेनचैवमारब्धो
a) Nidana b) Purva Rupa
c) Upashaya d) Samprapti

Answer

1. a 2. b 3. c
4. b 5. d

Topic 14

1. Manifestation of Rupa takes place in the fifth stage of ___________
a) Samprapti b) Kriyakala
c) Nidana d) Upashaya

2. Linga is synonym of
a) Nidana b) Rupa
c) PurvaRupa d) Upadrava

3. स्पर्शोपलभ्यःपरिपिण्डितत्वाद् is the pratyatmalakshana of
a) Siragranti b) Ashtila
c) Gulma d) Udara

4. Manifestation of Rupa takes place in which stage of Kriyakala
a) Vyakti b) Bheda
c) Sthanasamsraya d) Prakopa

5. Vyanjana is the synonym of
a) Rupa b) Upasaya
c) Samprapti d) Anupasaya

Answer

1. b 2. b 3. c
4. a 5. a

Topic 15

1. हिगिंतिकृत्वाकायतिशब्दायतेइति
a) Swasa b) Hridrga
c) Haleemaka d) Hikka

2. शङ्कस्फोटनवत्तस्ययस्मात्तीव्राहिवेदना
a) Sula b) Shankaka
c) Siroruja d) Dhanusthambha

3. The comprehensive web-portal for Standardized Terminologies and National MoRidity Codes of Ayurveda, Siddha and Unani Systems of Medicine and WHO-ICD-10 and ICD-11
a) AYUSH Sanjivani
b) AYUSH Research Portal
c) NAMASTE portal
d) e-Medha

Answer

1. d 2. c 3. c

Topic 16

1. Which among the following is/are seat of Vyadhi and Sukha?
a) Sharira b) Mana
c) Atma d) All of these

2. Find out Sahaja Karana Vyadhi from the following diseases
a) Prameha b) Arsha
c) Both d) Bhagandara

3. Total number of Vataja Nanatmaja Vyadhi is
a) 80 b) 90
c) 100 d) 120

4. Find out the Swabhavika vyadhi from the following diseases
a) Trishna b) Lobha
c) Moha d) Krodha

5. Achaya Prokopa type of disease manifestation is mentioned regarding
a) Agantuja Roga b) Nijaroga
c) Vataja Roga d) Sannipataja roga

6. Diseases are mainly categorized into ______ types as per Sushruta
a) Three b) Six
c) Nine d) Twelve

7. Vishada is included in _______
a) Vataja Nanatmaja Vyadhi
b) Pittja Nanatmaja Vyadhi
c) Kaphaja Nanatmaja Vyadhi
d) Raktaja Nanatmaja Vyadhi

8. Find out the Oupasargika Roga among the following
a) Gulma b) Prameha
c) Kushtha d) None of these

9. Which among the following is not a Nanatmaja Roga
a) Raktapitta b) Kamala
c) Galaganda d) Prameha

10. The factors responsible for Vyadhi Utpatti include all except
a) Sroto Sanga b) Dosha Kshaya
c) Doshaprakopa d) Dosha samya

11. ‘Tatah Dukha Samyogata Vyadhi....’ is told by
a) Charaka b) Sushruta
c) Vagbhatta d) Madhavakara

12. Sadhyasadhyata of Marma sandhi samasrta vyadhi according to Charaka is
a) Sadhya b) Asadhya
c) Yapya d) Krichhra Sadhya

13. Whether the context of Samkramika and Aupasargika Rogas are _____
a) Same b) Different
c) Slightly different d) None

14. Which among the following disease is included in Ashta Mahagata
a) Jwara b) Arsha
c) Pandu d) Atisara

16. Mudaga Rha is included in Ashta Maha Gadas by which Acharya
a) Caraka b) Susruta
c) Vagbhata d) Madava

17. औत्सुक्यारतिसम्मोहकरमिन्द्रियनाशनम् is the feature
a) Sadhya Vyadhi b) Asadya
c) Krichra Sadhya d) Yapya

18. आबाध इति आसमन्तात् कायमनसोर्बाधनं is about
a) Nidana b) Roga
c) Srotasa d) Ama

19. Which of the following is not included in Ashta Mahagadas
a) Prameha b) Rajyakhsh Ama
c) Jalodara d) Bhagandara

20. Vitiation of Sukra and Sonita by Vatadi doshas result in
a) Adibala pravrtta vyadhi
b) Janmabala pravrtta vyadhi
c) Adiboutika vyadhi
d) Sanghata bala pravrtta vyadhi

21. Caraka has divided the diseases in ____ categories based on prognosis
a) 3 b) 4
c) 5 d) 6

22. In the context of Kushta ‘Prasangatgaatrasamsp Arshatnishwasat...’ is explained by
a) Charaka b) Sushruta
c) Vagbhata d) All the above

23. Which among the following is Janma Bala Prvrutta Vyadhi
    a) Badhirya b) Prameha
    c) Kushtha d) Arsha

Answer

1. d 2. c 3. a
4. a 5. a 6. a
7. a 8. c 9. d
10. d 11. b 12. c
13. a 14. b 15. b
16. b 17. b 18. b
19. c 20. a 21. b
22. b 23. a

Topic 17

1. Endocrine disorder caused due to increased secretion of ACTH
   a) Addison' s disease
   b) Cushing syndrome
   c) Conn's syndrome
   d) Grave' s disease
2. Astaninditapurusha mentioned by which Acharya
   a) Susruta b) Madhavakara
   c) Charaka d) Vagbhata
3. Which among the following is not included in Astaninditapurusha
   a) Aloma b) Atigaura
   c) Atikrshna d) Atikapila
4. Javoparodha in Sthoulya is due to
   a) Saidhilya
   b) Soukumarya
   c) Gurutwa of medas d) All
5. Insufficient level of thyroid hormone in adults causes
   a) Tetany b) Myxedema
   c) Cretinism d) Goiter

Answer

1. b 2. c 3. d
4. d 5. b

Topic 18

1. Number of causes of Janapadodhwamsa (epidemics) as per Charaka
   a) Two b) Three
   c) Four d) Five
2. Which among the following is not a feature of polluted air
   a) Kledabahula b) Atishtimita
   c) Atibhairava d) Atiparusha

Answer

1. c 2. a

Topic 19

1. Nidanarthkara Roga term used for
   a) Sannikrishta Hetu
   b) Nidana Panchaka
   c) Samprapti
   d) A disease causing another disease
2. Arsaroga is the Nidana of which among the diseases
   a) Jathararoga b) Gulma
   c) Both A & B d) Sotha

Answer

1. d 2. c

Topic 20

1. ____is not among the three types of Ojo Vyapada.
   a) Vriddhi b) Vyapada
   c) Vistramasa d) Kshaya
2. Sandhi Vishlesha, Gatrasadan, Doshachyavana, Kriyasannirodha are the characteristic features of
   a) Ojovisramsa b) Ojovyapat
   c) Ojokshaya d) None of these
3. Which of the following cells are involved in cell mediated immunity?
   a) T-cells
   b) B-cells
   c) Mast-cells
   d) Both T and B cells

4. Which of the following disease is not caused by autoimmunity?
   a) Myasthenia gravis b) Lupus erythematosus
   c) Rheumatic fever d) Tetaus

5. Interferons are -
   a) Cytokine Barriers b) Physical Barriers
   c) Cellular Barriers d) Physiological Barriers

6. Which among the following factors is not contributing to Balavriddhikarabhava
   a) Satmyasampat b) Satvasampat
   c) Sara sampat d) Sarirasampat

7. Doshaprakrtivaikrityam, Laghuta Jwaradehayo and indriyavaimalya are the features of
   a) Sarvadoshakopa b) Doshapaka
   c) Dhatupaka d) Jwaramuktilakshana

8. Praman of aparojais
   a) Ardhanjali b) 1 anjali
   c) Shad bindu d) Ashtabindu

Answer

1.	a	2.	a	3.	a
4.	d	5.	a	6.	c
7.	b	8.	a		

Topic 21

1. The following Pariksha reflects the status of Sapta Dhatu
   a) Pramana b) Samhanana
   c) Sara d) Satva

2. Number of types of Satvika Kaya as per Sushruta
   a) One b) Three
   c) Five d) Seven

3. श्रीमद्भ्राजिष्णु is the features of which Sara-
   a) Tvak b) Rakta
   c) Mamsa d) Meda

4. विज्जलत्वात्सुश्लिष्टसारसन्धिबन्धनाः is mentioned in context to which Prakriti
   a) Vataja Prakriti b) Pittaja Prakriti
   c) Kaphaja Prakriti d) Samaprakriti

5. महाशिरःस्कन्धंदृढदन्तहन्वस्थिनख is mentioned indicates
   a) Raktasara b) Mamsasara
   c) Majja Sara d) Asthisara

6. पाकान्तेचगलताल्वोष्ठशोषदाहसन्तापाञ्जनयति is mentioned indicates
   a) अत्यग्नि b) तीक्ष्णःअग्नि
   c) तीक्ष्णःअग्नि d) तीक्ष्णःअग्नि

7. ह्रस्वजङ्घामेढ्रग्रीवं Indicates
   a) Pravara Sara b) Alpayu
   c) Madhyamayu d) Dheerghayu

8. हसतो जल्पतो वाऽपि दन्तमांसं प्रदृश्यते Indicates
   a) Pravara Sara b) Alpayu
   c) Madhyamayu d) Dheerghayu

9. ह्रस्वानि यस्य पर्वाणि सुमहच्चापि मेहनम् Indicates
   a) Pravara Sara b) Alpayu
   c) Madhyamayu d) Dheerghayu

10. स्निग्धमूत्रस्वेदस्वरं बृहच्छरीरमायासासहिष्णुं -------- Indicates
   a) Raktasara b) Mamsasara
   c) Majja Sara d) Medasara

11. No. of Sharirika Prakruti
   a) 7 b) 8
   c) 16 d) 18

12. दन्दशूकाः is Lakshana of which Prakruti?
   a) Kapha b) Pitta
   c) Vata d) All

13. 'Akleshashishnutvam' is symptom of which Dhatu Sara Purusha?
   a) Rasa b) Asthi
   c) Mamsa d) Rakta

14. Alpa Kesha and Akala Palitya are Lakshana of-
   a) Vata Prakruti, Pitta Prakruti
   b) Pitta Prakruti, Kapha Prakruti
   c) Pitta Prakruti, Vata Prakruti
   d) Vata Prakruti, Kapha Prakruti

Answer

1.	c	2.	d	3.	b
4.	a	5.	d	6.	a
7.	d	8.	b	9.	d
10.	b	11.	b	12.	d
13.	a	14.	a		

Topic 22

1. Dhatu paka lakshana is mentioned by
   a) Caraka b) Susruta
   c) Madava d) Sharangadhara
2. Which among the following is the feature of Dhatu paka
   a) Nidranasa b) Indriyavaimalya
   c) Vishtambha d) Both a & c
3. Type of necrosis found in tuberculosis
   a) Coagulative b) Caseous
   c) Liquefaction d) Fat
4. Type of necrosis found in peptic ulcer
   a) Liquefaction b) Fat
   c) Fibrinoid d) Coagulative
5. Dry gangrene seen in
   a) Thromboangitisobliterance
   b) Reynaud's disease
   c) Ergot poisoning
   d) All

Answer

1. c 2. d 3. b
4. c 5. d

Topic 23

1. Which among the following is not bacterial infection
   a) Diphtheria b) Cholera
   c) Polio d) Enteric fever
2. Ziehl-Neelsen (ZN) stain is used in the diagnosis of
   a) Tuberculosis b) Leishmaniasis
   c) Syphillis d) Leprosy

Answer

1. c 2. a

Topic 24

1. RogottarkalinVyadhi is also named as
   a) Upadrava b) SwatantraRoga
   c) Samsargaja Roga d) SannipatajaRoga
2. Stula and anu are the types of
   a) Aristha b) Upadrava
   c) Rupa d) Purvaroopa
3. Diabetic nephropathy is a clinical syndrome characterized by which of the following?
   a) Persistent increase in the glomerular filtration rate (GFR)
   b) Decreased arterial blood pressure
   c) Persistent albuminuria (> 300 mg/d or >200 µg/min) that is confirmed on at least two occasions 3-6 months apart
   d) Intermittent bouts of decline in GFR

Answer

1. a 2. b 3. c

Topic 25

1. The bad prognostic sign as per Charaka is
   a) Aristha b) Upadrava
   c) Rupa d) Purvaroopa
2. Arishtabheda as per Dalhana
   a) Sthayi & Asthayi b) Niyata & Aniyata
   c) Nitya & Anitya d) All
3. Seeing making friendship with monkey is the Arishtalakshana of
   a) Sosharogi b) Unmada
   c) Kushta d) Atisara

Answer

1. a 2. b 3. a